THE LANCET

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

TELEGRAPHIC ADDRESS—LANCET, LONDON [ONE HUNDRED AND FIFTY-TWO PAGES.] TELEPHONE NUMBER—5356 GERRARD

No. VIII. of Vol. II., 1908. No. 4434. Vol. CLXXV. LONDON, SATURDAY, AUGUST 22, 1908. Price 7d.; Post Free, 7½d. [Pp. 120+32.

TO ADVERTISERS.

The STUDENTS' NUMBER of THE LANCET Will be issued on Friday Next.

ADVERTISEMENTS CANNOT BE RECEIVED LATER THAN 12 O'CLOCK ON WEDNESDAY MORNING.

NOTICE.
Next Year's Issue of
THE MEDICAL DIRECTORY.
On Sept. 1st the Annual Circular will be posted. The Volume will be published about Dec. 14th and it will again be *six weeks more up to date* than has been customary.
7, Great Marlborough-street, London.

By E. HURRY FENWICK, F.R.C.S.,
Surgeon to the London Hospital.
A HANDBOOK of CLINICAL CYSTOSCOPY. With 31 Plates and 144 Engravings in the Text. 18s. net.
URETERIC MEATOSCOPY in the DIAGNOSIS and TREATMENT of OBSCURE DISEASES of the KIDNEY. With 14 Plates and 45 Illustrations in the Text. 6s. 6d.
OPERATIVE and INOPERATIVE TUMOURS of the URINARY BLADDER. With 39 Illustrations. 5s.
ULCERATION of the BLADDER, SIMPLE, TUBERCULOUS, and MALIGNANT. With Illustrations. 5s.
TUMOURS of the BLADDER. Fasc. I. 5s. net.
CARDINAL SYMPTOMS of URINARY DISEASE. Second Edition in preparation.
ATLAS of ELECTRIC CYSTOSCOPY. (With Dr. Buckhardt, of Bâle.) With 34 Coloured Plates. 21s. net.
London: J. & A. Churchill, 7, Great Marlborough Street.

By SAMUEL WEST, M.D., F.R.C.P.
DISEASES OF THE
ORGANS of RESPIRATION.
"It is worthy of British Medicine and of the great School in which the author is a teacher."—British Medical Journal.
Griffin & Co. 2 Vols., 36s. net, with numerous Illustrations.

Pp. xii.+168, with 91 Illustrations. Price 6s. net.
HANDBOOK of INTESTINAL SURGERY.
By L. A. Bidwell, F.R.C.S. Eng., Surgeon, West London Hospital; Lecturer on Intestinal Surgery and Dean Post-Graduate College.
London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

DAVIDSON'S BULLETIN of NOVELTIES.
Issued periodically. May Number very interesting.
Post free from
F. Davidson & Co., 29, Great Portland-street, London, W.

By W. ARBUTHNOT LANE, M.S.
OPERATIVE TREATMENT of FRACTURES
Demy 4to. 7s. 6d.
THE OPERATIVE TREATMENT of CHRONIC CONSTIPATION.
Uniform with above. 2s. 6d.
CLEFT PALATE and HARE LIP.
Uniform with above. 5s.
The Medical Publishing Company, Ltd., 22a, Bartholomew Close, E.C.

New Work. 240 pp. Illustrated. 5s. net.
SPINAL CURVATURES: The General Principles of their Treatment.
With a Critical Analysis of the Gymnastic Theories.
"*We must not fail to recognise, and to record our recognition of, the care and fulness with which the author has treated his subject. The book will be of value as containing the best exposition of this method of treatment.*"—The Lancet.
"*We attach importance to a supporting apparatus in the treatment of scoliosis. We do think that if the spine is supported in this way during growth it may grow straight, just as a bent tibia may.*"—Bristol Medico-Chirurgical Journal.
By Heather Bigg, F.R.C.S. Ed.
J. & A. Churchill, London.

Just Published.
DR. HARRY CAMPBELL'S
ON TREATMENT.
5s. net.
The Lancet.—"It is quite refreshing to find such original ideas on a subject so widely written upon as therapeutics. ..... There is a quality about Dr. Campbell's writing that is very attractive. ..... We believe it will obtain a popularity which it thoroughly deserves."
British Medical Journal.—"No medical man will read it without a feeling of refreshment and real gain ..... abounds in that higher power of common sense which may properly be called wisdom."
British Journal of Tuberculosis.—"It consists of a series of essays interesting in subject, graceful in form, and often marked by a piquant humour. Practitioners of all ages will find abundant material for serious contemplation and no little of practical service in these most attractive pages."
Bristol Medico-Chirurgical Journal.—"The book is full of sound teaching and is so interesting that it may well take precedence over the popular novel of the day."
Baillière, Tindall & Cox.

DORLAND'S ILLUSTRATED
MEDICAL DICTIONARY
NEW FOURTH EDITION
CONTAINS 2000 NEW TERMS
"THE NEW STANDARD"
Flexible leather 19s. net.; with Index 21s. net.
Send for Circular.
W. B. Saunders Co., 9, Henrietta Street, Strand, London.

THE FOOD FACTOR in DISEASE. Including the Pathology and Treatment of Bilious Attacks, the Paroxysmal Neuroses (Migraine, Asthma, Angina Pectoris, &c.), Gout, High Blood-pressure, &c. By Francis Hare, M.D., Consulting Physician, Brisbane Hospital. For abstract see The Lancet review—Feb. 17th, 1906, pp. 453, to 455.—Longmans, Green & Co. In two volumes. Price 30s. net.

A MEDICAL GUIDE to
CHATEL-GUYON-LES-BAINS (France).
Its Springs and their Uses in Diseases of the Stomach, Intestines (Mucous-Colitis), and Liver, with Local Information.
By Saint-René Bonnet, M.D. (Paris), L.R.C.P. (Lond.), M.R.C.S. (Eng.), Consulting Physician at Chatel-Guyon-les-Bains.
Copies will be sent gratis to English-speaking Practitioners on application to Dr. Saint-René Bonnet, Chatel-Guyon (Auvergne), France.

MOVABLE KIDNEY a CAUSE of INSANITY, NEURASTHENIA, &c.
By C. W. Suckling, M.D. Lond.
5s. net. Postage 4d.
INSANITY CURED BY A NEW TREATMENT.
By the same Author.
2s. net. Postage 2d.
MOVABLE OR DROPPED KIDNEY
By the same Author.
Price 2s. net. By post, 2s. 2d. net.
Birmingham: Cornish Brothers, Ltd.
London: Simpkin, Marshall & Co., Ltd.

By W. McADAM ECCLES, M.S., F.R.C.S.
HERNIA. Third Edition, 1908. Price 7/6 net.
121 Plates and other Illustrations.
THE IMPERFECTLY DESCENDED TESTIS.
Embodying the Jacksonian Prize Essay. Price 7s. 6d. net.
41 Plates and 76 Figures.
London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

GOUT: Its Pathology, Forms, Diagnosis, and Treatment.
By Arthur P. Luff, M.D., B.Sc., F.R.C.P.,
Physician to St. Mary's Hospital.
Third Edition, Revised and Enlarged. 10s. 6d. net.
Cassell & Co., Ltd., London, and all Booksellers.

BY C. MANSELL MOULLIN, M.D. Oxon., F.R.C.S., Senior Surgeon and Lecturer on Surgery at the London Hospital; late Examiner in Surgery at the Universities of Oxford and Cambridge.
ENLARGEMENT of the PROSTATE. Third Edition. Price 6s.
INFLAMMATION of the BLADDER and URINARY FEVER. Price 5s.
London: H. K. Lewis, 136, Gower-street.
WHEN to OPERATE in INFLAMMATION of the APPENDIX. Second Edition. Price 2s. 6d.
THE SURGICAL TREATMENT of GASTRIC ULCER. Price 2s. 6d.
London: J. Bale & Danielsson, Ltd., 83-89, Gt. Titchfield-street.

BY ROYAL WARRANT OF APPOINTMENT

DAIRYMEN

TO H.R.H. THE PRINCE OF WALES.

HUMANIZED MILK

BEST AND MOST RELIABLE,

Being prepared from Perfectly Fresh Milk, produced on the Company's Own Farms.

No. 1.
"Facsimile Human Milk."

Prepared from Milk constituents only. Analogous to the Best Mother's Milk.

SAMPLES FREE TO MEMBERS OF THE MEDICAL PROFESSION.

No. 2.
"Modified Humanized Milk."

With a minimum percentage of Casein. For very young and delicate infants.

FROM OUR OWN HERD OF MILCH ASSES

ASSES' MILK

SUPPLIED ON RECEIPT OF TELEGRAM TO ANY PART OF THE KINGDOM.

MEDICAL PRESCRIPTIONS OF MILK,

To contain any required proportion of Fat, Milk Sugar, Proteids, &c., prepared by the Company's Resident Chemist.

KOUMISS, PEPTONIZED MILK, STERILIZED MILK, &c.

Full particulars of Milk Preparations and Nursery Supplies on application.

WELFORD & SONS (DAIRY COMPANY) Ltd.

Own Farms: Harlesden and Willesden.

CHIEF DAIRY & OFFICES: ELGIN AVENUE, MAIDA VALE,

Branch Dairies in all parts of Metropolis.

BEING THE LARGEST DAIRY IN LONDON.

TELEGRAPHIC ADDRESS—"WELFORDS', LONDON."

PRINCIPAL TELEPHONE—No. 107, PADDINGTON.

A Clinical Lecture ON GRANULAR KIDNEY.

Delivered at the Northern Hospital, Liverpool,

BY W. B. WARRINGTON, M.D. LOND., F.R.C.P. LOND.,

PHYSICIAN TO THE HOSPITAL AND TO THE EYE AND EAR INFIRMARY; LECTURER IN CLINICAL MEDICINE IN THE UNIVERSITY OF LIVERPOOL.

GENTLEMEN,—Granular kidney is a disease of great practical importance; it is of common occurrence, a frequent cause of sudden death, its clinical history is most varied and its effects widespread throughout the organs of the body, and there is no doubt that treatment can do much to prolong the life and to alleviate the troubles of the sufferer. For these reasons it is rightly a frequent subject for clinical lectures and demonstrations and its various manifestations are fitly dealt with in detail. I purpose to-day rather to outline the chief events in its course.

The cardinal symptoms on which a diagnosis of granular kidney is made are: (1) cardio-vascular changes; (2) ophthalmoscopic examination; (3) manifestations of chronic or acute renal toxæmia; and (4) the urine. You will notice that the condition of the urine is placed last. I shall mention in their place the pathological changes in the urine, but the diagnosis of granular kidney is not infrequently missed because too much importance is placed on what, superficially at least, appears to be a negative result of examination. The cardio-vascular changes come first in importance. Both these and the retrograde tissue change in the kidney are to be considered as the result of some chronic form of defective metabolism. In some cases the most pronounced changes fall on the vascular system; a generalised, uniformly distributed change takes place in the arteries, arterioles, and capillaries of the body; arterio-sclerosis is present and the kidney substance is comparatively slightly affected with a fibrosis. In other cases the kidney is profoundly fibrotic and greatly reduced in size and weight, so that the pair may weigh only four or five ounces; whilst in another class these changes develop *pari passu*. Some writers therefore speak of an arterio-sclerotic kidney and a kidney of primary interstitial nephritis, but the differentiation between these two forms is not often clinically practicable nor is it pathologically certain.

Arterio-sclerosis and granular kidney constitute a disease *sui generis*, if, as I think should be, a sharp distinction is drawn between atheroma and arterio-sclerosis. Atheroma is a local affection of arteries, characterised by thickening and degeneration of the tunica intima, leading to fatty change and calcareous deposit. It is not uniformly distributed, and affects chiefly the larger vessels, notably the aorta, cerebral arteries, and coronaries; when it affects the radials the thickening may be felt as nodular patches or irregularly placed rings. Its etiology is not definitely settled; age, excessive physical strain thrown on the vascular system, and syphilis are most constantly found associated. Arterio-sclerosis, on the contrary, is uniformly distributed throughout the body; the radial arteries, coronaries, renal arteries, and arteries of the skin are equally affected. When the thickened radial is felt it is found to be uniformly affected. Histologically it differs chiefly from atheroma in the hypertrophy of the muscular tissue. If atheromatous degeneration occurs it is an added change probably arising from independent conditions. The causes of arterio-sclerosis are those of granular kidney; the working of products of defective metabolism, of which the two best known, though not the most frequent agents, are gout and lead. This distinction is important, for though the kidney may suffer in atheroma and the urine show the presence of a small amount of albumin and scanty casts, yet the evolution of the disease is quite distinct from the events which mark arterio-sclerosis and granular kidney. Of 18 post-mortem examinations in the last few years here on genuine granular kidney whilst vascular changes were found in all in only seven was there any atheroma. In granular kidney the thickening of the arteries can almost invariably be recognised in the radial by obliterating the blood stream and rolling the artery on the subjacent bone; this was a very distinct feature in a girl, aged 14 years, in whom the necropsy showed very small, typical contracted kidneys. At this age atheroma does not occur. Quite distinct from the thickened artery is the tension of the pulse, the lateral pressure of the blood inside the vessel, a real estimation of which gives the true blood pressure. This tension is recognised by the well-known sphygmographic tracing with the round or square top and the gradual decline of the line; with the finger the tension is recognised by the fulness between the beats. It is a normal feature of granular kidney that the tension is high and when it falls, unless this is brought about by therapeusis, it indicates a condition of failure of compensation. The thickening of the artery is, however, a constant feature and more trustworthy therefore for diagnosis. The Riva-Rocci instrument measures the compressibility of the brachial artery to which it is applied and its reading depends on both the features just mentioned. Hence it is only *fluctuation* in the reading from time to time that indicates variations in blood pressure. The high figures obtained in patients suffering from granular kidney in its later and terminal stage are often really associated with low tension or blood pressure, but the compressibility of the artery is not correspondingly reduced.

The second feature is the enlargement of the heart. In younger subjects this can be readily made out and clinically the indications are those of hypertrophy of the left ventricle, the apex beat displaced downwards as well as outwards and the impulse being well localised and forcible; but in older subjects the enlargement of the heart is often clinically under-estimated on account of the emphysema not infrequently found in the subjects of granular kidney. Pathology, however, shows that though the left ventricle is affected chiefly, the right side of the heart also enlarges, a fact that would seem to indicate that the noxious agents in the blood affect primarily the heart muscle and that the heart changes are not to be explained on purely mechanical theories. On auscultation at the apex you find the first sound is muffled and of lower pitch than normal, whilst at the aortic cartilage the second sound has a characteristic, clear, high-pitched, ringing tone. These are the cardio-vascular signs which accompany a "compensated" granular kidney without signs of renal inadequacy. The patient may be in possession of excellent general health, able to do a fair share of physical work and showing certainly no diminution of mental vigour, yet he is liable almost at any moment to grave trouble. The chief danger to the patient in this stage of the disease is cerebral hæmorrhage. Of 19 cases of cerebral hæmorrhages seen here recently 11 were associated with granular kidney, and so far as we could ascertain all the patients had been in good health before the apoplexy. It is important to remember, however, that though the apoplexy, as its name indicates, is a sudden event, yet the vascular disease of the brain may have given previous warning of its presence by apparently trivial symptoms, and if the patient has been fortunate enough to consult you then you may be able, although you can never tell, to prevent this tragedy. The symptoms such patients may complain of are headache, attacks of dizziness, and temporary difficulty in speech.

Headache in granular kidney is often a symptom of chronic toxæmia, but apart from that condition it may be due to the high blood pressure and disease of the arteries; it has no particular site and is not constant, yet it may be very severe. A man I saw a short time ago, in excellent health, though known to be the subject of chronic renal disease, soon after a game of golf was attacked with violent pain in the back of the head; so severe, in fact, was the pain, especially as it was associated with a stagger in the gait, that grave organic disease of the brain was for a time suspected, but under eliminative doses of mercury and nitro-glycerine the symptoms disappeared. Giddiness, neuralgic pains, depression of spirits, and impairment of memory also not infrequently are the symptoms which lead patients to seek advice. More significant, because probably due to actual rupture of the minute miliary aneurysms, is a temporary difficulty of speech, sometimes mere difficulty in articulation, and other times a slight forgetfulness of words, a verbal amnesia. Last year a man in apparently good health consulted me because of such an occurrence a week previous to his visit. When I saw him he spoke perfectly well; the cardio-vascular signs of granular kidney were

distinct and I heard that some months later he had suddenly died from a cerebral hæmorrhage. In the early stage Dr. S. West says that epileptiform convulsions are not infrequent. Two years ago a woman, aged 35 years, was admitted comatose from, as was shown by necropsy, cerebral hæmorrhage and granular kidney. She had been doing her work as a shop assistant up to the date of her fatal illness. We were told that she was supposed to be in good health but that during the last two years at intervals of 12 months she had a short series of epileptiform fits attended by loss of consciousness. Another patient, a man, aged 60 years, with arterio-renal sclerosis and in quite fair health, has for the last two years had several series of convulsive seizures. Certain forms of hæmorrhage may occur: in the early stage epistaxis, which is fairly frequent, at a rather later period copious hæmaturia, hæmatemesis and melæna, which are all rare.

There are other symptoms, really of a terminal nature, which may suddenly cut down a patient with granular kidney in the midst of apparently fair general health, but those I have mentioned are accidents liable to happen to patients who may live many years, and as a further guide at this stage the ophthalmoscope is of the greatest service. I am not now alluding to those changes at the back of the eyes which are classed as albuminuric retinitis and which are generally of grave import—these will be mentioned later—but to changes in the vessels which precede degenerative retinal changes and which probably the more they are searched for the earlier they will be found. Their detection requires some skill and experience and it is desirable that you should use the direct method of observation; these changes were first fully described by Mr. R. Marcus Gunn. The arteries are narrower than usual, irregular in breadth, may present fusiform enlargements, they frequently show a brilliant central streak of metallic lustre (the silver wire arteries), and the streak may be broken, patchy, or dotty. It is important to note, again, that these changes do not occur in atheroma, Professor de Schweinitz, recently writing on the subject, lays great stress on the early appearance of such changes in the vessels, amongst the earliest appearances being a corkscrew appearance of certain arterial twigs or the "crinkled" retinal vessels. In later stages of the disease they are found associated with retinitis, but I have found them in a man, aged 34 years, in whom the only other ophthalmoscope change was a slight blurring of the optic papilla; the patient some time afterwards died with typical symptoms of granular kidney.

What is the condition of the urine in these patients? The cirrhotic "compensated" kidney behaves like that of a healthy person. It is well known that such patients excrete an unusual amount of urine and hence that the urine is of low specific gravity. It has been stated that the cirrhotic kidney is incapable of secreting a sufficiently concentrated urine. Von Noorden dissents from this view. It will be remembered that Dr. J. Rose Bradford removed large amounts of kidney substance from animals and found that the animals rapidly wasted and that the urine became more abundant and dilute. These experiments might be thought to throw a light on the polyuria of granular kidney. Bainbridge and Beddard, however, have been unable to confirm this result. Von Noorden considers that all patients with renal cirrhosis suffer from thirst, hence polydipsia and polyuria result; but if reasonable restrictions are put on the fluid intake the amount of urine diminishes, the specific gravity and molecular concentration increase, and the total output of solids is hardly altered. The urine of the patient I have shown you to-day has been analysed daily for over a month. It is a "compensated kidney" case. At first the diet consisted of two and a half pints of milk and half a pint of cream—i.e., of 1700 cubic centimetres of fluid containing about 8·5 grammes of nitrogen. In an average of five days we find that 38 grammes of nitrogen were excreted as against an intake of total nitrogen of 42·5 grammes, but the amount passed per diem fluctuated considerably—on one day 10·3 grammes were passed, on another only five grammes. It is this variation, somewhat eccentric, that is found in uncomplicated renal cirrhosis, rather than a nitrogen or urea retention. When this patient was put on a mixed diet which contained 11 grammes of nitrogen a day the same facts were obvious. It is necessary to know the amount of fluid intake and the value of the food in nitrogen before diagnostic interferences are justified from the amount and nitrogenous concentration of the urine, and then only when a series of observations are compared.

The nitrogenous value of various foodstuffs you will find given in many text works and it is important to have such tables handy for purposes of reference. A useful table is given in Vaughan Harley's recent book on "The Chemical Investigation of Gastric Diseases." The methods in use in the University laboratories for the accurate estimation of the nitrogen in the urine and for the determination of amount of the different nitrogen containing urinary substances cannot be used in daily clinical practice, but you will find the estimation of nitrogen when carefully done by the hypobromide method to give quite valuable results in most cases. We use Dr. W. Gordon Little's ureometer and the solution is prepared by mixing 20 cubic centimetres of a 40 per cent. solution of KOH mixed with 2·2 cubic centimetres of bromide contained in glass bulbs. The readings give the total nitrogen in the urine of the urea and ammonia.

With regard to albumin, this is not infrequently absent altogether; it is capricious in its appearance and often of only small amount, so small that the test with cold nitric acid will hardly give a discernible ring. When this reaction is not perceptible you may, however, often find a faint cloudiness on heating and then adding a drop or two of dilute acetic acid; this test is very delicate and in persons over 40 years of age may be of importance. Urinary casts, although scanty, are nearly always present and their presence is very valuable; they are commonly of the hyaline or granular variety. If the urine is centrifugalised they can be easily found, but when this is impossible allow the urine to stand for some time and then withdraw by a fine pipette a considerable amount of fluid from the bottom of the urine glass, place it on a slide, and examine without a coverglass with a low power and a closed diaphragm. Attention to these details will enable you to recognise the casts when otherwise you might fail to do so.

At any stage in the disease an acute nephritis may be added to the old-standing disease and may be thought to be the primary mischief, unless evidence of old-standing disease be recognised, such as thickening of the arteries, the discovery of albuminuric retinitis, or changes in the retinal blood-vessels. The picture may become one like primary acute nephritis, œdema occurs, the urine alters its character, becoming scanty and highly albuminous, and the heart may fail and exudations take place into the serous sacs. In the later stages of granular kidney the dangers that threaten the patient are cardiac failure with all its consequences, albuminuric retinitis, and uræmia. In Bright's disease of all kinds a constriction takes place in the peripheral vascular areas, whether in the arteriolar or capillary field, or in both; the heart responds to this added resistance by hypertrophy and in acute Bright's disease hypertrophy of the left ventricle may be recognised within six weeks of the onset. In many of these cases the natural history is that of a return to the normal, the kidney lesion disappears, and with it the vascular changes both in the vessels and heart In the granular or arterio-sclerotic kidney, on the other hand, the changes, at least except in the very early stages, are permanent and the tendency is towards further pathological changes. The high arterial tension is compensatory and has the advantage that it promotes the transudation through the capillary walls of nourishment for the tissue. In a very considerable number of cases the heart breaks down under the strain, dilatation is added to the hypertrophy, the pulse tension or blood pressure becomes low, and the patient presents himself as a sufferer from heart failure. Of 24 cases of granular kidney admitted for symptoms other than those of cerebral hæmorrhage, 17 suffered from various manifestations of heart disease, and the diagnostic problem is the recognition of the primary renal nature. It is not always easy. The history will help you to exclude rheumatic disease of the heart. Syphilis is certainly a more common cause of atheroma and primary cardiac disease than it is of granular kidney.

Atheroma from other causes may also cause great cardiac enlargement not unlike that of granular kidney. Age may help you here, and if the radials or other superficial arteries share in the atheroma you may be able to recognise the irregularly distributed nodular or ring-like plaques of

atheromatous disease. Albuminuric retinitis is characteristic of renal disease, so also are uræmic phenomena. The condition of the urine may be abnormal in cardiac failure from any cause if there is venous stagnation in the kidney. Albumin appears in the urine and may be in considerable quantities; as the condition of the circulation improves it tends to disappear. Its persistence with improvement of the cardiac condition and the presence of casts in the urine in fair numbers would be evidence of renal origin.

With the failing heart there may be, of course, dropsy, ascites, hydrothorax, and all the familiar symptoms of the water-logged body. In Bright's disease effusions into the serous sacs may be not only of the nature of a simple transudation but due to infections favoured by the state of the blood, and they come on with great suddenness. Dr. F. J. Poynton classifies the multiple causes of dyspnœa in kidney affections as follows: (1) respiratory—e.g., pleural effusion, bronchitis, œdema of the lungs and of the glottis; (2) nervous—uræmic asthma; and (3) cardiac—dilatation, pericarditis, and hydrops pericardii. With regard to the uræmic asthma I warn you to be careful and never to make this diagnosis unless the other causes have been excluded. Pleural effusion if acute may produce grave dyspnœa even when the amount of effusion is small and it is imperative to exclude this cause.

The routine use of the ophthalmoscope will not infrequently enable you to make a diagnosis of granular kidney in obscure cases. The changes of albuminuric retinitis are fairly common. Excluding the arterial changes which I have described and which may be found in comparatively early stages of the disease, I have observed well-marked changes in about 10 per cent. of chronic renal diseases, mostly in the granular kidney. There are a few points to remember. 1. None of the appearances, except the arterial changes, are absolutely distinctive of renal disease, but may in rare cases be exactly simulated by, say, the changes in cerebral tumour. 2. The most characteristic feature is the appearance of small, glistening, woolly-whitish patches often arranged in a striate fashion round the macular region. These are degenerative in nature, are permanent, and may require careful searching for with a dilated pupil, and the direct method. 3. Other changes are larger white patches, irregularly distributed on either side of the disc; they are probably exudations. Hæmorrhages and papillitis are not uncommon. All these may disappear. 4. They may occur at any age. I have seen the most advanced papillitis and hæmorrhages in a girl, 14 years of age, with typical granular kidney. 5. The prognostic significance of the degenerative patches is grave, yet one patient I knew was alive five years after very extensive changes were present. I may again emphasise that so protean are the manifestations of granular kidney that the examination of the eye may be the one thing which will make a puzzling case clear, and, as in the optic neuritis of cerebral disease, vision may be not at all, or only slightly, affected.

Lastly, a few words on renal toxæmia. I need not do more than mention the acuter stages, the patient lying in bed drowsy and semi-comatose with recurring convulsions, attacks of vomiting, often delirious or even maniacal. In this state many patients with granular kidney pass away and it frequently is ushered in abruptly. I saw some time ago a woman whom her husband assured me had been constantly engaged in her household duties without suspicion arising that she was ill. One day she complained of headache and of temporary loss of vision; this was rapidly followed by a drowsy, lethargic state; the pulse and ophthalmoscope indicated the diagnosis and I learned that she died in a day or two. The more chronic states of toxæmia may lead to errors in diagnosis. The anæmia, wasting, and cachexia of advanced granular kidney must be borne in mind. I well remember some years ago a man seeking admission to this hospital who had been dismissed from a parish infirmary; he looked thin and ill, and though there was no albuminuria the state of the pulse and the presence of retinitis proved the existence of granular kidney.

I have tried to sketch to you the history of this remarkable disease and to indicate how it may simulate grave disease of almost any organ, and that while you should especially suspect it in obscure cases in persons over 40 years of age, that yet even children are not immune.

TREATMENT.

From this aspect there are several groups of cases: (1) the compensated kidney where the excretion of urinary products is not greatly interfered with; (2) the acute exacerbations where the treatment resembles that of acute nephritis; (3) the cases with cardiac failure; (4) the more chronic symptoms of renal toxæmia; and (5) the hopeless cases where, as von Noorden says, the desires and tastes of the patient should be met so far as possible. In the compensated kidney cases the treatment should be chiefly prophylactic. Alcohol in general is undesirable and should be reserved for transitory use. Condiments, such as spices, pepper, ginger, and mustard, are likely to be harmful, and the heart is especially sensitive to the irritants of coffee, tea, and tobacco. Strong broths and meat extractions should be forbidden but a wide choice allowed in wholesome flesh proteid food. Von Noorden considers that the average daily nitrogen should not fall below 12 grammes, which requires about 85 grammes proteid. Physical treatment is important; a dry, warm climate is the best and patients who remain in this country should be warned against catching cold. Rich patients may winter with advantage in Egypt and in spring take the baths of Nauheim, Homburg, Soden, and Schwalbach. At home lukewarm sitz baths, followed by a brisk rub, should be used. Muscular exercise should not be given up. Whilst the high tension of the pulse is natural to the disease it may become an evil and if the symptoms mentioned before occur it should be lowered. Baths, a fairly free action of the bowels, and an occasional dose of blue pill are the best remedies. For more urgent symptoms nitrites, as sodium nitrite and erythrotetranitral, are more persistent in their action than nitro-glycerine.

Cardiac failure has to be treated in the usual way, the freshly made infusion of digitalis being of special value combined with some vaso-dilator. Caffein, diuretin, and theocine may be tried. Caffein acts mostly on the heart muscle, theocine on the renal cells, but if not soon successful they should not be pushed. Tincture of iron and strychnine when the cardiac equilibrium is becoming established are of great service, especially for the cachexia and anæmia. Excess of water is harmful. Von Noorden has insisted strongly on this point and both in the early and later periods of the disease limits the fluids to 1500 cubic centimetres, excluding the 500–700 cubic centimetres of fluid in solid food. One day a week he allows his patients to drink as much as they please.

The condition of the urine should be watched, reduction in the amount, and the presence of a considerable quantity of albumin indicate, in the absence of cardiac failure, the existence of inflammation in the renal tissue. On the other hand, the advent of renal inadequacy may be gauged by watching the specific gravity, together with the total amount of urine passed. The freezing point of a fluid varies with its molecular concentration and when the cryoscope was introduced into medicine hopes were entertained that the adequacy of the renal secretion could be accurately estimated, but such hopes have not been justified, partly because there is no normal freezing point for normal urine, partly for various physical reasons which introduce error difficult to correct. After the precipitation of albumin the estimation of the specific gravity gives the same results as cryoscopy which determines the presence of all molecules in true solution and, in fact, it has been determined that the lowering of the freezing point, which means the diminution in molecular concentration, may be determined empirically by multiplying the last two figures of the specific gravity by 0·075° C. (G. Fuchs). Another useful empirical determination is, that the last two figures of the specific gravity multiplied by 2·23 give the amount of solids per litre. Of course, the quantity and kind of food ingested cause marked variation in these results but with a constant diet the results are useful. Thus a patient gradually passing out of a uræmic state increased the amount of urinary solids thus calculated from 20 to 79 grammes, and in the reverse case, a typical case of granular kidney had been doing fairly well and reached an excretion of urinary solids, 56 grammes; this rather rapidly fell to 37 grammes; the next day drowsiness and fits supervened; the following day 49 grammes were passed, the uræmic state cleared off, and was followed by a profuse diuresis with an excretion of 123 grammes. The estimation of the urinary nitrogen will also indicate the renal adequacy, though there may be nitrogen retention for many days without uræmia, yet usually during uræmia there is nitrogen retention. Bartels made the interesting observation that uræmic convulsions sometimes occur when œdema is diminishing—i.e., during the passage of

nitrogeneous extractions into the blood. I have mentioned that the characteristic feature of nitrogen excretion is its eccentric variation, so that single observations are not reliable. More certain, however, than reliance on determinations of this nature is the appearance of milder toxæmic prodromata, malaise, uneasiness, headache, and slight mental wanderings. With these indications or with signs of renal toxæmia elimination by the bowels and skin is to be encouraged. It seems doubtful if nitrogenous substances are eliminated by the skin, but when there is œdema the diaphoresis saves the kidney and relieves the heart. Even when there is no dropsy sweating is valuable. Warm baths or a vapour bath not infrequently relieve toxæmia and the intense and distressing headache is abated. For this latter symptom Dr. West recommends pilocarpine, even though, as he points out, it does not cause diaphoresis readily in cases of granular kidney. Hot rectal saline injections at a temperature of 110° F. are recommended by Tyson. The fluid should be run in slowly, as this remedy is employed in cases of collapse by the surgeon. I have tried it with considerable success in toxæmia from various causes. I strongly agree with those who do not withhold morphine in renal cases. For restless, painful nights with cardiac dyspnœa it is invaluable; a small dose should be given at first (1-10th to 1-6th grain). It is safe also in convulsions; for these, too, chloral perhaps most conveniently given by the rectum, in doses of from 30 to 40 grains, is valuable. Occasionally lumbar puncture has cut short the fits, and with robust patients and a high-tension pulse venesection is often successful.

The excretion of salts, especially of NaCl, has recently attracted great attention and NaCl has been considered as the cause both of urœmia and of œdema. Both these statements are highly doubtful. NaCl is secreted by the glomeruli with the urinary water, phosphates are secreted by the tubules. Excretion in any form of Bright's disease is more variable than in health and in general runs parallel to the nitrogen excretion. With œdema there certainly is a coincidence of salt-and-water retention, and a salt-poor diet has a favourable influence, but the etiological relationship of these facts is doubtful. Other factors, chief amongst which is increased permeability of the blood-vessels produced by toxic substances, must be considered.

A Clinical Lecture

ON A CASE OF

GIGANTIC RETRO-PERITONEAL TUMOUR, INTIMATELY CONNECTED WITH THE KIDNEY, WHICH SIMULATED ASCITES FROM TUBERCULOUS PERITONITIS.

Delivered at the Bristol General Hospital

BY CHARLES A. MORTON, F.R.C.S. ENG.,

PROFESSOR OF SURGERY IN UNIVERSITY COLLEGE, BRISTOL; SENIOR SURGEON TO THE GENERAL HOSPITAL AND THE CHILDREN'S HOSPITAL; AND CONSULTING SURGEON TO THE COSSHAM MEMORIAL HOSPITAL, BRISTOL.

With a Report on the Pathology of the Tumour by E. V. DUNKLEY, M.B., B.S. Lond., *Pathologist to the Bristol General Hospital.*

GENTLEMEN,—A young man was admitted into my ward last February with a very remarkable abdominal condition, which I propose to describe to you. I did not at first recognise the great interest of the case as the condition simulated ascites from tuberculous disease of the peritoneum, but at the operation it was found to be an enormous tumour of the retro-peritoneal space, partly cystic and partly solid, and the amount of fluid contained in the cysts was very large. It is an interesting fact that the patient had been some years earlier in the Bristol Royal Infirmary for the same condition in a less advanced degree, and then also a diagnosis of chronic tuberculous peritonitis had been made.

The patient, who was 22 years of age, seemed to have taken very little notice of the enormous size of his abdomen, and continued his occupation as a marker at billiards up to Feb. 13th. He then struck his distended abdomen against the edge of the table, and as this caused him some pain he went to see Mr. G. S. Page about it, and he sent him to the hospital to see me the next day, and he was at once admitted. When I saw the young man the day after admission I was very much struck with the gigantic size of his abdomen. I have never seen a case of ascites or ovarian cyst of such size, though I have seen very large abdomens distended by ovarian cysts. It was clearly mainly a collection of fluid; it fluctuated freely, and there was a marked fluid thrill across the abdomen, and there were certain features present which suggested that what seemed to be ascites was due to tuberculous disease of the peritoneum. In tuberculous peritonitis we often find ridges, and bands, and lumps, due to tuberculous thickening of the omentum, or deposits of tubercle on adherent coils of intestine, and we may get local obstruction of coils of intestine from such deposits and adhesions, causing intermittent resonant swellings. In this case at times a ridge could be felt extending from the umbilicus towards the left costal margin, and at other times a resonant area would appear in the same region and another sometimes higher up. These intermittently resonant areas suggested, if not obstructed coils, at any rate adherent coils, and together with the ridge made me incline to the diagnosis of tuberculous peritonitis. Later on in our observation of the case another resonant area appeared below the umbilicus, and the left flank was always resonant. The explanation of these physical signs will be evident to you when I describe the relation of the tumour to the intestines. Another feature often present in ascites due to tuberculous disease of the peritoneum was also present here; on dipping through the ascitic fluid one could obscurely feel solid masses here and there like the masses I have just spoken of which are formed by tuberculous deposits in the omentum and around coils of bowel. I thought the fact that we could only feel this ridge extending from the umbilicus to the left costal margin at times might be accounted for by its being only apparent when pushed near the surface by distension of bowel lying beneath.

At the upper end of the illustration the expanded costal arch is seen, above are the sternum and ribs. The abdominal cavity appears to be almost filled by the large tumour. Across the middle of it the cæcum and ascending colon lie. The darker masses to the left of the illustration are coils of small intestines. At the bottom of the illustration is the right groin, with some obscure folds of gauze on it.

There was one feature about the case which was not to be explained by the supposition that the condition was one of ascites from tuberculous peritonitis or any other cause, and that was that the enlargement of the abdomen was very much greater above than below the umbilicus, so that the umbilicus appeared pushed down. Nothing abnormal could be felt per rectum. The liver dulness was much increased upwards and the heart was much displaced upwards. There were no signs of disease in the lungs. No œdema was present in the lower

limbs and the urine was normal. The young man was very thin.

The history was a very remarkable one even for a long-standing case of tuberculous disease of the peritoneum. His mother told us that when he was 12 years of age she noticed that the lower part of his chest was abnormally large. When he was 14 or 15 years of age he fell from a horse but he did not remember that he specially struck his abdomen nor had he pain in it until the next day. He then went to the Bristol Royal Infirmary for abdominal pain and was admitted under Dr. A. B. Prowse, who has been kind enough to look up the record of his case, and informs me that the lad was an in-patient under him for two months, and that he thought the condition was one of chronic tuberculous peritonitis. His mother also told us that his abdomen had very much increased in size since then, but, as I have already told you, it seemed to cause him very little inconvenience. He had no vomiting or troublesome constipation.

I opened the abdomen on Feb. 20th by an incision between the umbilicus and the pubes and evacuated a little clear straw-coloured ascitic fluid, and it was evident that the abdomen was occupied by an enormous cystic tumour, which was retro-peritoneal. It had raised the peritoneum on the right side up to the anterior superior spine, and the cæcum and ascending colon had disappeared from the right side of the abdomen. Passing obliquely downwards on the cyst from left to right was a coil of large bowel and all the small intestines seemed to hang off the left side and lower margin of the cyst. The tumour did not reach down into the pelvis. Although it was retro-peritoneal on the right side and had extensively stripped up the peritoneum on the right side it had not done so on the left and it projected to this side much as a pedunculated ovarian cyst would do. At this stage of the operation I thought, from its relation to the intestines and the way it had stripped up the peritoneum from the right side of the abdomen, it might turn out to be a hydronephrosis. I selected a part of the cyst under my incision, just beneath the spread out colon, and after packing around with gauze divided the peritoneum and then the cyst wall (which was fairly vascular) and evacuated a large quantity of almost black turbid fluid with a great quantity of very soft material, like very old and partly decolourised clot. I could then feel another cyst bulging into the one I had evacuated and I ruptured the wall of this second cyst with my finger from within the first cyst, and evacuated from it even a larger quantity of fluid than from the first. This fluid was also almost black in colour, but not as turbid as the other, and no solid material came from this cyst. The evacuation of the fluid in these cysts, which more than half filled a pail, had very greatly reduced the abdomen in size, but a large mass yet remained, and after clamping the opening in the cyst and washing all cyst contents away from my hands I passed one of them as far up as I could over this mass. It occupied the right side of the abdomen and felt everywhere solid. I could just touch the lower margin of the liver above it but could reach nothing more in an upward direction. I felt that the chance of removal of such a tumour with a successful result was too small to make it right to attempt it and I therefore stitched the cyst wall to the abdominal wall and put in a drainage tube. His pulse was quite good at the end of the operation.

The bilocular character of the cyst seemed to exclude hydronephrosis and the character of the fluid was very unlike such a condition. Dr. Dunkley's examination of the fluid seemed to negative pancreatic cyst, and the right-sided position of the cyst was not in favour of this origin either, though pancreatic cysts do sometimes occupy the right side of the abdomen. Dr. Dunkley reported that the fluid had a specific gravity of 1022; contained much coagulable albumin and a small amount of urea and cholesterine, many red corpuscles, but few leucocytes, and that egg albumin was not digested by it.

Unfortunately, the contents of the cyst became septic. With this profuse discharge it was no doubt very difficult to prevent this. He got a hectic temperature and became exhausted, and died five weeks after the operation. For some hours before his death he complained of sharp pains in the upper abdomen.

The photograph which I show you will, I think, give you a good idea of the size and position of the solid part of the tumour and its relation to the descending colon. In the photograph the abdomen seems to be filled by the large tumour and the cæcum and ascending colon can be seen spread out on it, and extending obliquely upwards and to the left, and the small intestines can be seen crowded into the left corner of the abdomen. In the upper part of the abdomen, under the costal margin, where it is dark in the picture, the liver, stomach, and spleen were crowded upwards. You can just see the lower edge of the liver very faintly. The liver was much flattened out between the tumour and the diaphragm. The tumour was wholly retroperitoneal and was very intimately connected with the right kidney, which was spread out on it, but the flattened-out renal tissue was easily recognised; there was a fair amount of it. The pelvis of the kidney did not form a cyst, but the ureter was dilated in parts, apparently from the pressure of the tumour on it. There was one cyst in the tumour which had not been drained at the operation. This was somewhat larger than an orange and contained the same kind of fluid which was evacuated from the other cysts. The solid part of the tumour, together with the cyst walls, measured 12 by 14 inches and weighed 16 pounds. On section, to the naked eye it resembled an œdematous fibroid. Some recent purulent deposit was present on the peritoneum in the upper abdomen the origin of which was obscure.

You will see now the explanation of the physical signs which suggested that the condition was one of ascites from tuberculous peritonitis. The enormous collection of more than half a large pail of fluid within the abdomen suggested the ascites. The colon fixed on the anterior wall of the tumour, and just under the abdominal wall, when empty and contracted, gave rise to the ridge running obliquely upwards and to the left from the umbilicus, and when distended with gas could no longer be felt as a ridge but caused the resonant area. The feeling of something solid here and there on dipping through this fluid was due to the solid part of the tumour palpable in certain regions.

Pathological Report on the Tumour by Dr. DUNKLEY.

Microscopic examination showed the tumour to be a fibro-myoma. Sections made through the junction between the kidney and tumour showed no sharp line of demarcation, the tumour substance appearing to be continuous with the kidney capsule. The kidney substance close to the junction showed increase of interstitial tissue and atrophy of the tubules. The tissue in the region of the junction was very vascular.

THE ALLEGED DISCOVERY OF SYPHILIS IN PREHISTORIC EGYPTIANS.

BY G. ELLIOT SMITH, M.A. CANTAB., M.D., CH.M. SYD., F.R.S.,

PROFESSOR OF ANATOMY, THE EGYPTAIN GOVERNMENT SCHOOL OF MEDICINE, CAIRO.

SINCE the publication of my letter under the above heading in THE LANCET of Dec. 21st, 1907, p. 1788, there has come to hand a detailed description, illustrated by excellent photographs, of a case of supposed syphilis in a prehistoric Egyptian skeleton.[1] The author is my distinguished friend, Professor Lortet, ancien doyen de la Faculté de Médecine de Lyon, whose scientific eminence would have entitled his opinion to great consideration, even if it were not supported, as it is in this instance, by the "membres de la Société de Médecine, ainsi que ceux de la Société Médicale des Hôpitaux de Lyon et à l'Institut de France" (*Comptes Rendus de l'Institut*, 1er Juillet, 1907, p. 25)—(*op. cit.*, p. 42). In these circumstances it seems only reasonable to respond to the demand which has reached me from various quarters for somewhat fuller information on this matter than appeared to be necessary when I wrote my short letter last December.

Whatever view one takes of the statements regarding the occurrence of syphilitic lesions in neolithic bones found in Europe[2] any information that goes to prove that the disease either did or did not exist in Egypt in ancient times must have a considerable interest and importance for students of

[1] Lortet et C. Gaillard: "La Faune Momifiée de l'Ancienne Egypte et Recherches Anthropologiques," troisième série, Extrait des Archives du Muséum d'Histoire Naturelle de Lyon, 1907.

[2] See Buret, "La Syphilis à travers les âges"—quoted by Fouquet (op. cit. infra.), p. 368.

the history of medicine. In the first place let me summarise the account given by Professor Lortet (*op. cit.*). The specimen on which his observations were made is the skull of a young Egyptian woman, whose age is estimated at from 20 to 23 years, found in a grave, said to be predynastic, at Roda, near Luxor, in Upper Egypt. The cranium of this young woman "presents an extremely remarkable osseous affection, the syphilitic nature of which is undoubted" (*op. cit.*, p. 41). As the excellent illustrations show (Fig. 37, p. 42; and Pl. I.) the left side of the skull (and especially the parietal bone) has been severely attacked by "une ulcération serpigineuse, irrégulièrement circonvoluée," which has led to the disappearance of the external table of the bone; in certain places the internal table also has been attacked and actual perforations have been produced, establishing direct communications between the exterior and cranial cavity (p. 41). The edges of these deficiencies are widely bevelled at the expense of the outer table. In the neighbourhood of the large lesion there are five or six other patches, "atteints d'une nécrose semblable ayant donné lieu à des perforations complètes du diploé et de la table interne." Other places again have only just begun to be affected "par le processus pathologique" and appear as irregular, whitish spots presenting a marked contrast to the yellowish colour of the rest of the cranium "et laissant voir une substance osseus plane encore, mais plus ou moins ruguese." "Ce dépoli est dû à l'altération commençante de la table externe de l'os" (p. 41). After further elaborating the account, the commencement of which I have reproduced, partly in a literal translation and partly in the author's own words, in the above sentences, Professor Lortet describes the exact distribution of the lesions on the skull and the absence of any signs of disease of the teeth. He laments the fact that the rest of the skeleton, which might have afforded corroborative evidence, is missing, but he mentions that the cranium has been submitted to "l'examen approfondi" of the members of the various medical societies in Paris and Lyons enumerated already; and, finally, he sums up his remarks in the following words: "La syphilis, croyons-nous, devrait être surtout en cause, et cependant, il manque un des caractères les plus importants que l'on peut presque toujours rencontrer sur les lésions osseuses de cette nature: ce sont les exostoses circonvoisines ....." Continuing, he adds: "Malgré l'absence de ce caractère, les lésions sont si semblables, quant à la forme, à ce que l'on peut constater dans certains cas de syphilis invétérée, que nous ne pouvons nous empêcher de croire que c'est à cette infection spécifique, que nous avons affaire sur ce crâne de Rôda. Les exostoses n'ont peut-être pas en le temps de se produire chez cette jeune femme qui a mourir rapidement" (p. 43).

In opposition to the suggestion of Professor Poncet that the case might be tuberculous disease, Professor Lortet brings the statement that he has rarely seen tuberculosis in mummies and adds: "Mais cependant, pour nous, comme pour un certain nombre de spécialistes qui ont étudié cette pièce c'est la syphilis que l'on doit incriminer" (p. 43).

As I mentioned in my letter to THE LANCET in December the diagnosis of such lesions in prehistoric Egyptian crania as syphilis is by no means a novel suggestion. More than ten years ago Dr. Fouquet gave an account of a series of similar injuries in predynastic crania obtained in Upper Egypt.[3] Some of these were definitely admitted to be post-mortem "irregular serpiginous ulcerations, involving the external table and the whole thickness of the diploe, which looks as though it had been gnawed" (p. 365). Further, he recognised that "brown or dark-grey deposits were found in the floor of such ulcers, resembling the débris of wood, *rongé par les vrilletes ou les larves de longicornes*, which have left behind them both the detritus of the material gnawed and their own excrement" (p. 365). He also noted that such injuries usually occurred on the most dependent parts of the bones, which he explained by the statement that organic materials prone to fermentation would gravitate towards these places and impregnate such parts of the skeleton with their juices when decomposition set in; in this way colonies of "traîvailleurs de la mort" would be attracted to these dependent parts (*op. cit.*, p. 366).

In the face of this lucid statement and the frank recognition of the post-mortem nature of some of his series it is more than ever a matter for surprise to find that Dr. Fouquet selects three cases, which to the reader do not seem to differ from the rest, and without any adequate explanation diagnoses them as the ante-mortem effects of syphilis (p. 368). So far as his descriptions and the figures[4] that illustrate them enable one to pass a judgment on the matter at issue, all three of these so-called syphilitic lesions seem to fall into the category of post-mortem damage, the causation of which has been so graphically pictured in the above quoted remarks of Dr. Fouquet. That Dr. Fouquet did not misjudge the momentous bearing of such a decision on our ideas of the history of medicine is indicated by the disquisition he gives (p. 368) of the significance of his discovery. If anything further were needed to arouse our suspicion of the diagnosis of these three cases as syphilis it is surely provided by the succinct description of the distinctive features of the bony lesions of syphilis written by Professor Gangolphe of Lyons for Dr. Fouquet's memoir (*op. cit.*, pp. 366 and 367). I am aware that Dr. Fouquet regards Professor Gangolphe's note as "*tout à fait en faveur de la nature syphilitique des lésions observées*" (p. 366); but the unbiased reader would like to know not only how this note can bear such an interpretation, but also by what process Dr. Fouquet discriminates between the post-mortem and the ante-mortem members of his series of cranial ulcers. For neither Dr. Fouquet nor Professor Lortet admit that there is any sign whatsoever of inflammatory reaction in the bone around the ulcers. That this can be explained away by the statement quoted in the preceding account—"the young woman died so rapidly that there was not time for the exostoses to develop" (Lortet)—none of the pathologists whom I have consulted on this matter are ready to admit.

My colleague, Professor A. R. Ferguson, has kindly explained to me the pathognomonic signs of syphilis in the collection of diseased bones in the pathological museum of the Cairo School of Medicine. None of these crania, many of which were affected by violent forms of syphilitic attack, failed to show very definite evidence of inflammatory reaction and new bone formation. Nor did any of these diseased bones present any really close resemblance to the specimens described by Professor Lortet and Dr. Fouquet.

But I shall leave the appreciation of the distinctive characters of these so-called ulcers to those who are competent to express an opinion on them. Moreover, I shall not deal any further with the specimens described by the writers whom I have quoted in the above paragraphs. What I am specially concerned with in this note is to point out that "ulcers" presenting the closest resemblance to those described by Professor Lortet and Dr. Fouquet are of very frequent occurrence in Egyptian bones of every age *when they are buried actually in contact with the soil*, and to demonstrate by means of evidence that calls for no knowledge of pathology for its appreciation the post-mortem nature of such injuries.

It is now more than six years since I was first able to satisfy myself as to the real nature of these lesions. At that time Dr. G. A. Reisner was conducting excavations for the Hearst Egyptian Expedition of the University of California at Naga-ed-dêr in Upper Egypt, when he kindly permitted me to begin the examination of the anthropological material which he and his assistants, Mr. Lythgoe and Mr. Mace, were bringing to light in such vast quantities. Dr. Reisner called my attention to the "worm-eaten bones" and told me that previous writers had expressed very definite opinions as to the causation of these injuries. In the case of the cranial lesions Dr. Fouquet had suggested syphilis as the causal agent (*vide supra*) and the injuries to the shafts of long bones (Fig. 1) had been attributed by Professor Flinders Petrie to

DESCRIPTION OF ILLUSTRATIONS ON PAGE 523.

FIG. 1.—The shaft of the left radius of a prehistoric Egyptian, gnawed by beetles so as to open into the medullary cavity.

FIG. 2.—The left side of the cranium of a prehistoric Egyptian. It has been severely attacked by beetles, whose tracks are seen in the thinner parts of the layer of soil adhering to the skull. A large cap of soil has been removed from an ulcer which completely perforated the cranium. The white spots are shallower excavations made by beetles.

FIG. 3.—The same specimen with the cap of soil (shown in Fig. 4) in place.

FIG. 4.—The cap of soil removed from the skull shown in Figs. 2 and 3 and reversed to show the openings of three small beetles' burrows on its inner side. Slightly enlarged.

[3] J. de Morgan: Recherches sur les Origines de l'Égypte, Paris, 1897. Appendix by Dr. Fouquet: Recherches sur les Cranes.

[4] I have also had the advantage of seeing the photographs of the specimens from which these figures were drawn.

FIG. 1.

FIG. 2.

FIG. 3.

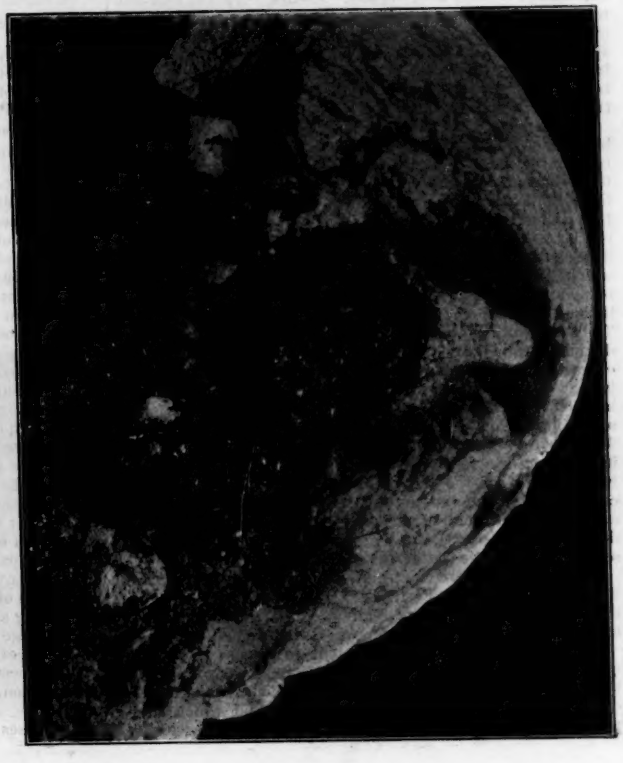


FIG. 4.

human beings addicted to cannibalism, who had gnawed the bones so as to get at the marrow in the medullary cavities. Dr. Reisner suspected the inaccuracy of both explanations for several reasons, one of which was that he had already noticed the partiality of these lesions for the under surfaces of the bones as they happened to lie in the ground.

Forewarned by the knowledge of these facts from the commencement of my field work I have kept particular note of the circumstances under which these so-called syphilitic lesions occur. During the last six years I have seen a very large number of such "ulcers," both in the skull and in the other bones of the skeleton. The first example that came under my notice at Naga-ed-dêr is shown in Figs. 2 and 3. This case was submitted to a thorough examination and the causal agent was demonstrated beyond any possibility of doubt; in the light of the knowledge thus gained I have had no difficulty in recognising damage produced in the same way in many scores of cases in the course of my field work and can certainly identify the lesions so admirably represented in Professor Lortet's photographs (*op. cit. supra*, Fig. 37, p. 42, and Pl. I.) as perfectly characteristic examples of the same thing. In the vast majority of cases these injuries occur on that side of the bone that happens to be undermost and especially on those parts which are pressed tightly against the soil. Thus, in the case of prehistoric people buried lying on the left side the "ulcers" are most commonly found on or near the left parietal eminence and the left malar bone (compare Lortet's case). At other periods the body was often placed in the soil lying on the right side or flat on the back; in such cases the lesions occur on the right side of the skull or on the occipital bone respectively. If the bones have been disturbed by ancient plunderers and the skull comes to lie face downwards it is the frontal bone and face that will be attacked (compare Fouquet's typical case). Sometimes the upper surface of a bone or skull may be attacked, but in such cases the damage as a rule is much slighter and is merely an outlying part of the much more severe injury to the under surface (compare Lortet's case).

The following list of undoubted facts can bear only one interpretation—namely, that the injuries were inflicted after death. These "ulcers" are found only in the case of bones that are in contact with the soil. Bodies buried in rock-cut tombs or in coffins are exempt from such injuries. Moreover, a white powder, consisting of pulverised bone, is often sprinkled over the damaged part and the adjoining soil; in many cases this is so obviously fresh that its age cannot be more than a few months, whereas the bones had been in the soil for thousands of years.

When such a mutilated bone is removed from the soil the burrows of small animals (Fig. 4) can always be seen leading to the "ulcer." Fragments of the soil from the walls of these burrows and also that taken from the damaged surfaces of bones were examined by my colleague, Professor Looss, and found to contain fragments of the elytra of beetles. The burrows, usually about one millimetre in diameter, must have been formed by very small beetles, which also caused the damage to the bones. That this is no mere inference but a demonstrable fact is shown at once if the edges of the "ulcers" be examined by means of a lens. The little grooves produced by the scraping of the beetles are distinctly visible. Professor Looss suggested the search for this characteristic feature. As a rule the soil around the "ulcer" is converted into a hard cake, which firmly adheres to the bone (Fig. 2). This is no doubt caused by the excretion of sticky fluids from the beetles' bodies. Such masses usually form a cap over each hole produced by beetles in bone, and if such a cap be removed (Figs. 3 and 4) it will be found to be riddled with the burrows of the insects, which have caused the damage to the bone (Fig. 4). The white spots and the areas devoid of polish, which Professor Lortet has described (*vide supra*), are merely the results of the earlier stages of the beetles' attack on the bone (see Figs. 2 and 3).

I do not think there can be any doubt whatsoever that the injuries described by Professor Lortet and Dr. Fouquet as the results of syphilis were really produced long after death and burial and that the damage was done by small beetles.

I do not pretend to be competent to discuss the larger question whether any of the ante-mortem lesions found in the ancient Egyptian bones in our collection are the results of syphilis. But no case has yet been found which competent pathologists are willing to attribute to the action of the syphilitic virus to the exclusion of all other possible causal factors. Moreover, among the very large number of ancient Egyptian skeletons that have come under my notice during the last seven years I have seen only two cases in which even the possibility of a syphilitic origin presented itself. Not a single tooth from an ancient Egyptian cemetery has been seen to exhibit any trace of the effects of syphilis or anything even resembling it. We are therefore bound to admit that, so far as we know at present, syphilis did not occur in Egypt before the time when intimate communication with Europe was established.

Cairo.

A DIGEST OF EIGHTY-SIX CASES OF EPIDEMIC CEREBRO-SPINAL MENINGITIS ADMITTED TO THE MIDDLE WARD HOSPITAL, MOTHERWELL, IN 1907.

BY ERNEST WATT, M.D. GLASG., D.P.H.,
ASSISTANT MEDICAL OFFICER OF HEALTH, COUNTY OF LANARK.

THE following notes give a short account of the symptomatology, diagnosis, and treatment of 86 cases of cerebro-spinal meningitis which I had under supervision in the Middle Ward Hospital, Motherwell, during 1907, accompanied by a brief note on the bacteriology of the cases.

Symptomatology.—The following table shows the more prominent symptoms and the frequency with which each was observed:—

Symptoms.		Number of cases in which observed.
Posterior cervical rigidity	Marked	69
	Slight	13
Vomiting		70
Kernig's sign	Marked	40
	Slight	27
Retraction of head	Slight	33
	Moderate	21
	Marked	9
Headache		53
Eye symptoms	Extrinsic muscles	18
	Pupillary ,,	11
	Pupillary and extrinsic muscles	11
Eruption	Erythematous	21
	Petechial	16
Muscular pain		22
Spinal rigidity		21
Convulsions	General	15
	Local	6
Hyperæsthesia		20
Herpes		14

The condition most frequently present was rigidity of the posterior cervical muscles. It was met with in 82 (95·3 per cent.) of the cases. It occurred in the earliest cases brought under observation and was present in a marked degree in 69 cases. In 13 cases this condition was found in only a slight degree and in four it was absent. Two of these last were in a deeply comatose condition on admission and two were convalescent. To elucidate this sign the patient should be placed in the position of dorsal decubitus; with the hand under the occiput an attempt is made to flex the head. Should rigidity be present the movement is resisted and if the attempt to flex the head be persevered in the patient's shoulders are raised off the bed and little or no flexion movement occurs. Similarly, where it is inexpedient to place the patient on his back the trunk moves across the bed when flexion of the head is attempted. This rigidity is volitional and disappears under the influence of a general anæsthetic; in several cases also it was not present after the patient had become comatose, but in two cases in which the coma had passed off the rigidity again set in. Only when the patients were advanced in convalescence did we find the movements of flexion and extension of the head free.

Vomiting at the onset of illness was present in 70 cases—a percentage of 81·39. As one must largely trust to the statements of the patient's friends the frequency with which vomiting occurs as an initial symptom must be accepted with caution, and probably the percentage here given is too low.

In 53 cases there was a definite history of headache. It

was a constant feature in the adult cases, and as so many patients were too young to give expression to their feelings an accurate estimate of the occurrence of headache must ever remain impossible. The headache is usually very severe and causes the patient to cry out at intervals, and in children a good deal of the restlessness met with is probably due to this cause.

Muscular pains, especially in the back and legs, were noted in 22 cases. This was seldom a constant feature, but in those passing into the hydrocephalic stage severe pains were complained of on moving the patient in bed. Hyperæsthesia was a pronounced feature in 20 cases. It most commonly occurred towards the end of the febrile period and lasted into the hydrocephalic stage. In many cases it was so pronounced that even striking the bed with the hand caused the patient to cry out.

Kernig's sign was present in a marked degree in 40 cases and in a slight degree in 27. It was present in all of the adult cases.

Symptoms referable to the eye were met with in 40 cases. In 18 of these the extrinsic muscles of the eyeball alone were involved. The external rectus was the one most commonly involved and therefore internal strabismus was most frequently observed. 11 cases exhibited pupillary symptoms. Generally these consisted in inequality of the pupils during the early stages of the illness, but when the patient had passed into the hydrocephalic stage the condition was usually one of dilated pupils with sluggish reaction to light. In the remaining 11 cases both pupillary signs as well as those referable to the orbital muscles were seen. In all of the cases which passed into the hydrocephalic stage a certain degree of photophobia was met with, the patient showing a marked preference to lie with the face covered by the bedclothes.

Fifteen cases developed general "convulsions." Mostly this condition occurred in the fulminant type of case, though in a few of the less rapidly fatal type it was met with. The "convulsions" were tonic in character at the commencement, becoming clonic as the attack passed off. Six other cases showed convulsive movements, principally tonic in character, of one or more limbs, and in all of these the neck and face muscles were also involved. Noisy delirium occurred in 21 cases and in a few of these (fulminant) it assumed a violent character.

Retraction of the head was met with in 63 cases, a percentage of 73·2. In 33 cases the condition was only slight, in 21 it was fairly well marked, and in nine the head was thrown so far back that it almost touched the scapulæ and deglutition was impossible. As a rule, marked retraction occurs only in the acute stage of the illness and becomes less pronounced as this passes off. Where, however, the stage of hydrocephalus has developed a certain degree of retraction remains. In the accompanying reproductions of photographs of one case the progressive tendency of the condition is well seen.

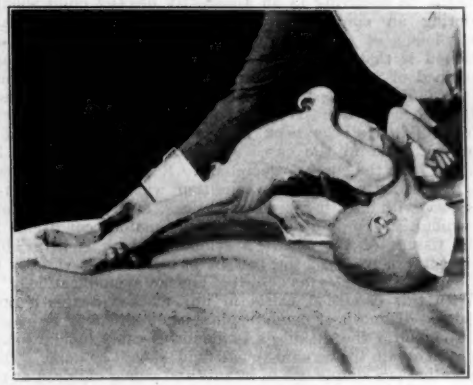
In 14 cases a herpetic eruption, principally about the lips, nose, and neck, was met with. In one instance the condition was very extensive and involved not only the lips and chin but also the upper part of the right anterior triangle of the neck. This eruption was found to occur in the early stage of the illness and was limited, with few exceptions, to the severe form of the disease.

A petechial eruption of the skin was seen in 16 cases and an erythematous in 21 cases. In three of the fulminant cases the former condition existed on the trunk and extremities as dusky irregular areas from a quarter to half an inch in diameter. In the remaining cases showing petechiæ on the skin the eruption consisted of scanty small areas of hæmorrhage varying in size from a sixteenth of an inch to an eighth of an inch across, principally limited to the chest, back, and abdomen, and less often seen on the flexor surfaces of the arms and front of the thighs. Of the 21 cases which showed an erythematous eruption, one (fatal case) was morbilliform in type, but it did not involve the face. In all of the others the condition was an erythema of the trunk

FIG. 1.

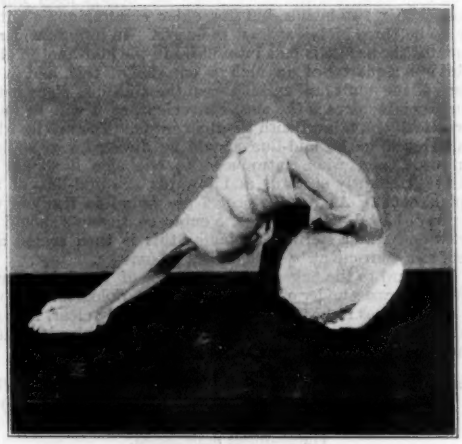
Shows the patient in the third week of illness.

FIG. 2.



Shows the patient in the fifth week of illness.

FIG. 3.



Taken after patient's death in the ninth week of illness. The emaciation is very striking.

and sometimes of the extremities and varied from a faint blush of the skin to a more dusky condition.

Diagnosis.—A history of vomiting (sudden) and severe headache occurring in an apparently healthy child should, during an epidemic of cerebro-spinal meningitis, raise suspicions of the disease. A not uncommon history obtained is that the child was at play and suddenly complained of sickness and headache and within a few hours its condition is desperate and unconsciousness supervenes. In such cases there is seldom much retraction of the head but rigidity of the neck I have found to be invariably present even in the cases where death ensued within 24 hours from the onset of symptoms. Retraction of the head is a distinctly suggestive condition when it occurs but it is met with in other head conditions, such as tuberculous meningitis, and is also seen in inflammatory conditions in the tissues of the neck. A symptom which is invariably present except when the patient is comatose is rigidity of the cervical muscles (as described under "symptomatology"). When this condition exists in any marked degree a provisional diagnosis of cerebro-spinal meningitis may be given.

To confirm the diagnosis in doubtful cases lumbar puncture to obtain the cerebro-spinal fluid should be done. This operation is a simple one in infants and young children as no anæsthetic is required. In children of four years of age and upwards, and especially in adults, a general anæsthetic should be given: in the first place to prevent alarming the patient by causing pain, and in the second in order to have the spine immobile during the operation. In the case of children under the age of five years the needle need not be longer than two inches, but for older children and adults it must be three inches at least in length. In infants under 18 months the needle is best introduced in the mid-line, in older children a quarter of an inch to one side of this, and in the case of the adult half an inch from the mid-line. The fourth lumbar interspace is the most convenient, as it will be found practically on a level with the iliac crests. The needle when introduced in the mid-line should be directed very slightly upwards, and when introduced to one side it should be directed slightly upwards and towards the mid-line of the spinal canal. As few diplococci are found in many of the fluids obtained, not less than 5 cubic centimetres should be drawn off into a sterile receptacle: this is then sealed and sent to a convenient bacteriological laboratory.

In regard to the naked-eye appearance of the fluids drawn off in the cases under observation for bacteriological purposes from the cases in hospital 15 were persistently clear, 23 were turbid, 32 were purulent, in two the fluid was blood-stained, and in 14 its appearance was not noted.

Table showing the Result of the Bacteriological Examination (a) of the Fluid obtained by Lumbar Puncture and (b) of the Patient's Blood.

Fluid.—Direct examination.

Meningococcus present.		Meningococcus not found.		Unknown.	
Fatal cases.	Recovered cases.	Fatal cases.	Recovered cases.	Fatal cases.	Recovered cases.
20	6	34	15	3	8

86

Fluid.—On culture.

Meningococcus present.		Meningococcus not found.		Unknown.	
Fatal cases.	Recovered cases.	Fatal cases.	Recovered cases.	Fatal cases.	Recovered cases.
42	18	12	3	3	8

86

Blood.—On culture.

Meningococcus present.		Meningococcus not found.
Fatal cases.	Recovered cases.	
5	5	24

34

It is seen on looking at this table that in 20 fatal cases (23·2 per cent. of the total) the specific organism was found on direct examination of the fluid and also in 6 of the "recovered" cases (6·9 per cent. of the total). In 49 cases the specific organism was not found and in 11 cases no record was kept.

A much higher percentage of positive results was obtained when cultures of the fluid were examined. Thus in 60 instances (or 69·7 per cent. of the total) the specific organism was found; in 15 (or 17·4 per cent.) the organism was not found, and in 11 no record was kept. The blood taken from 34 cases in the febrile stage of the disease was found to contain the specific organism in 10 instances on culture. The other 24 gave a negative result. Of those which gave a positive result 5 had a fatal issue and 5 recovered.

Treatment.—In the acute fulminant type of cases little can be done except to ameliorate the most pronounced symptoms. Thus, where headache is severe relief of intradural pressure by lumbar puncture frequently converts a very restless patient into a comparatively quiescent one for a few hours. In the less acute type of case exhibiting recurring attacks of headache, rises of temperature, and perhaps vomiting, lumbar puncture is indicated on the recurrence of each attack. By using a needle of fine calibre (except where flakes of pus have been found formerly) and allowing the fluid to slowly trickle out large quantities may be removed, and not infrequently from 1 to 2 ounces are drawn off in about 20 minutes. The advantages of using a fine needle are that less pain is caused during introduction, the pressure is gradually relieved, and there is less chance of injuring the cauda equina.

Special treatment in the form of various sera was tried in 49 cases. These were selected as acute cases. In 22 the serum was given subcutaneously and in 27 intradurally. The percentage of recoveries was no greater than the total—viz., 32·7 per cent. and 32·6 per cent. respectively. When given early in the disease the serum seems to mitigate somewhat the tendency to hydrocephalus. In making comparisons in this disease an important fallacy crops up—namely, alteration in severity of type of disease. Thus towards the end of 1907 the cases admitted were not so seriously ill as those admitted during the spring and early summer. Recovery from the disease in the case of adolescents and adults is occasionally rapid and uncomplicated but unfortunately a number exhibit an intermittent type of fever—the temperature rising at intervals of a few days accompanied by a recurrence of headache and sometimes vomiting. It is often necessary during these attacks to withdraw fluid by lumbar puncture. In the case of a large proportion of young children who recover a variable period characterised by hydrocephalic symptoms is passed through. During this stage special treatment in the form of nasal and rectal feeding is necessary owing to inability to swallow. The amount of emaciation is often extreme and the child may linger in this stage for weeks. Ultimately the appetite returns, the patient puts on flesh, and the mental condition becomes again active.

The largest quantity of fluid drawn off in any one case (recovery) was 171 drachms. Records were kept of the total amount of fluid drawn off by lumbar puncture. It measured 1342 drachms. Excluding four cases in which no puncture was performed this was an average of 16·3 drachms per case.

Sequelæ: (1) *Deafness.*—Of those which recovered four were absolutely deaf to both air and bone conduction on dismissal. In three other cases the deafness was temporary. In two of these hearing returned prior to discharge from hospital, and in the case of the third—a girl, aged 15 years—hearing to loud voice returned some months after leaving hospital.

(2) *Paralysis.*—In two of the recovered cases a spastic paresis of both lower extremities was met with. One of these was a female, aged 16 years, who suffered during convalescence from severe pain in the lumbo-sacral nerves. She made a good recovery, however, and was able to walk freely for some time prior to discharge. After being at home for a few weeks difficulty in walking again developed and she went into the Edinburgh Royal Infirmary for treatment. Unfortunately, she is now unable to walk without support. The second case was that of a child, aged four years, who was 240 days in hospital. At one stage she had marked hydrocephalic symptoms. She became blind, apparently deaf, mentally dull and aphasic, except for the monosyllable "Aye." Later, when volition again became active it was found that there was spastic paresis of both lower extremities with ankle clonus and exaggerated knee reflexes. Improvement was slow, but on discharge she was able to walk unaided, though still with a slightly spastic gait. In neither of these two cases was there involvement

of the sensory nerves. None of the other patients who recovered showed symptoms of injury to the motor nerve tracts.

Motherwell.

THIRTY-FIVE CONSECUTIVE CASES OF EXTRA-UTERINE PREGNANCY DEALT WITH BY ABDOMINAL SECTION WITHOUT A DEATH.

BY JAMES OLIVER, M.D. EDIN., F.R.S. EDIN., F.L.S.,
PHYSICIAN TO THE HOSPITAL FOR WOMEN, SOHO-SQUARE, LONDON.

EXTRA-UTERINE gestation is in these days a derangement of not infrequent occurrence, yet a clinical synopsis of 35 cases dealt with by abdominal section in the practice of one individual may be of interest and it may help to dissipate some of the erroneous impressions which exist regarding this remarkable phenomenon—impressions due to conclusions framed and promulgated on insufficient data. The group is a very varied one. It includes six cases in which the fœtus had arrived at maturity and had died before delivery was effected and three in which the operation was performed after the development of the placenta was completed and whilst gestation was actively progressing. The majority of the cases, as is natural, were cases in which the embryo had perished at an early stage of its existence in consequence of a more or less extensive extravasation of blood caused by the rupture of one or more of the physiologically enlarging maternal vessels. One only is specified as an undoubted case of ovarian pregnancy, but I am constrained to believe that some of those in which the gestation sac was located in the broad ligament were also cases of ovarian pregnancy and my reason for expressing this belief is that had they ever been located in the tube internal hæmorrhage would have occurred and, moreover, we occasionally find true ovarian cysts in the mesometrium and there is no apparent reason why an actively progressing ovarian pregnancy should not also gradually insinuate itself into the substance of the broad ligament.

CASE 1. *Full-time extra-uterine pregnancy; gestation sac in left broad ligament; fœtus dead.*—The patient, aged 34 years, had been married for four years and had had one child. The child was born three years previously and was suckled for 14 months and was weaned because the menstrual discharge had reappeared. From this time until 12 months before the patient came under my care menstruation had recurred regularly. 12 months ago "a period" was missed and the patient considered herself pregnant. After seven weeks' amenorrhœa she had a severe attack of abdominal pain and fainted. On regaining consciousness she observed that there was a slight hæmorrhagic discharge from the genitals. In two hours this discharge had ceased and she was quite herself again. After a lapse of four weeks there was again a slight hæmorrhagic discharge but no pain. After a period of six months, during which there was complete amenorrhœa, there was again "a slight show" of blood but still no pain. Three months later what the patient considered her usual menstrual discharge made its appearance. As, however, it had persisted for four weeks she consulted me. She had all along considered herself pregnant but she was not quite certain that she had ever felt movements. Colostrum was readily obtained from both breasts.

Operation.—A full-time female child with its placenta was abstracted from the left broad ligament. The peritoneal cavity was extensively opened. The sac was stitched to the anterior abdominal wall and drained.

CASE 2. *Full-time extra-uterine pregnancy; gestation sac in right broad ligament; fœtus dead.*—The patient, aged 33 years, had been married for six years and had had two children; these were twins and they were born five years previously. Twelve months ago the patient missed two menstrual periods and when she considered herself ten weeks pregnant she was suddenly seized with severe abdominal pain, sickness, and diarrhœa. The sickness and diarrhœa soon subsided, but for nine and a half months she had complained more or less of abdominal pain. When five months pregnant "a fleshy piece" was passed without hæmorrhage, and this no doubt from its description was a large piece of so-called decidual membrane. A month later there was a "slight show" of blood from the genitals. The fœtal movements were felt after about the fifth month but the patient could not remember when she ceased to feel them. After a period of practically 12 months' amenorrhœa delivery was effected by abdominal section. The breasts were flabby but colostrum was readily obtained.

Operation.—A full-time male child was removed from the right broad ligament. The placenta was not removed. The sac was stitched to the abdominal wall and drained. The abdominal incision opened the peritoneal cavity extensively.

CASE 3. *Full-time extra-uterine pregnancy; gestation sac in left broad ligament; fœtus dead.*—The patient, aged 33 years, had been married for nine years and had had five children and one miscarriage. The last child was born three years previously and was suckled for 15 months. 15 months ago the menstrual discharge failed to make its appearance and for ten and a half months thereafter there was complete amenorrhœa. The menstrual discharge then reappeared and during the five months preceding her visit to me menstruation had recurred regularly and she was advised to see me because she had gone seven months over the time she expected to be confined and the abdomen was still large. The breasts were not characteristic of pregnancy and colostrum could not be obtained from them.

Operation.—A full-time male child was extracted from a sac in the left broad ligament. This was effected without opening the peritoneum. The sac was drained. The placenta in pieces came away afterwards.

Since the operation this patient has been twice pregnant. On the first occasion she miscarried; on the second she carried the child to full time and was confined of a living child without trouble.

CASE 4. *Full-time extra-uterine pregnancy; gestation sac in a capsule connected with the right ovary, in a peritoneal sac resembling that of the tunica vaginalis.*—The patient was aged 33 years and had been married for nine years. She had had three children and one miscarriage; the last child was born three and a half years previously. 12 months ago the patient missed being unwell and for 11 months thereafter there was complete amenorrhœa. She had considered herself pregnant but nothing unusual happened until towards the end of the 11 months amenorrhœa when she observed that she had come unwell and as this hæmorrhage had persisted for 19 days she was advised to see me. She had never during the 11 months suffered any pain. She had felt the movements from about the fifth month. The breasts were characteristic in appearance and colostrum was obtained readily from both.

Operation.—The fœtus with its placenta was removed from a sac connected with the right ovary. The greater portion of this sac was excised; the remainder was stitched to the abdominal wall and drained. The peritoneum in this case was opened very extensively.

CASE 5. *Full-time ovarian pregnancy; gestation sac containing fœtus and placenta removed intact; fœtus dead.*—The patient, aged 39 years, had been married for 12 years and had had one child; the child was born 11 years previously. During the last 12 months there had practically been complete amenorrhœa. At the fourth, ninth, and tenth months of this amenorrhœal period there was a "mere show of blood." On the first of these occasions a fleshy piece, which no doubt was decidual membrane, was passed. About the time that the second period was missed the patient complained a good deal of abdominal pain and this troubled her altogether for three or four weeks. From this time onwards she experienced very little abdominal discomfort. The fœtal movements had been felt but she was uncertain when she first felt them and when she ceased to feel them. The breasts were not characteristic in appearance but colostrum was obtained easily from both.

Operation.—The right mesovarium was ligatured and dealt with as in the case of any ordinary ovarian cyst and the tumour containing the fœtus and placenta was removed intact. The tumour was incised after it had been removed and the fœtus and placenta were then for the first time brought into view.

CASE 6. *Full-time extra-uterine pregnancy; gestation sac in left broad ligament; fœtus dead.*—The patient, aged 37 years, had been married for 15 years and had had five children, the last child having been born ten years previously. 11 months ago a menstrual period was missed

and 14 days later she started losing and lost continuously for eight weeks. After this there was complete amenorrhœa for seven months. During this amenorrhœal period she had complained slightly of pain in the left iliac region but this had never been severe. After this and immediately before seeing me the patient had had what she considered two normal menstrual periods. The breasts did not arouse one's suspicion of pregnancy; no colostrum was obtainable from them.

Operation.—A full-time female fœtus was abstracted from a sac in the left broad ligament. An attempt to remove the placenta provoked free hæmorrhage, so I left it and stitched the sac to the abdominal wall. The peritoneum in this case was extensively opened.

CASE 7. *Six months extra-uterine pregnancy; gestation sac in left broad ligament; fœtus dead.*—The patient, who was 28 years of age, and had been married three and a half years, had had no child and no miscarriage. Until eight months previously menstruation had recurred regularly. There was then for five months complete amenorrhœa. During the succeeding three months she had on two occasions observed signs of a slight hæmorrhagic discharge. Almost immediately the first period was missed she began to complain of morning sickness and this was noted altogether for about two months. Ever since the first period was missed she had complained of dull aching pain in the left iliac region. The breasts were not characteristic of pregnancy, but colostrum was readily obtained from both.

Operation.—The fœtus was undergoing degeneration and tore in pieces on being extracted. The placenta was removed also. The sac was stitched to the abdominal wall and drained. It was traversed by two peculiar and thick fibrous bands. The peritoneal cavity was opened extensively.

CASE 8. *Four and a half months extra-uterine pregnancy; gestation sac in left broad ligament; fœtus extracted alive.*—The patient, aged 25 years, had been married for five and a half years, and had had two children, the last child having been born two years previously. For four and a half months there had been complete amenorrhœa. By a medical attendant prior to the attendance of the doctor in consultation with whom I saw this patient curettage was done when the extra-uterine pregnancy had been in existence six or seven weeks. In consequence of the curettage there was for two days a slight hæmorrhagic discharge. Soon after the first menstrual period was missed and before the uterus was curetted the patient had complained of severe abdominal pain, and it was on account of recurring attacks of this pain that I was asked to see her. The appearance of the breasts was suspicious of pregnancy but no colostrum could be obtained from them.

Operation.—The fœtus, which displayed signs of life for nearly 15 minutes after it was removed from the mother's body, lay in a sac in the left broad ligament. The placenta was separated and removed also. Many vessels at the base of the sac had to be ligatured. The sac was closed with deep and superficial catgut sutures; it was not stitched to the abdominal wall. The latter was closed in three layers.

CASE 9. *Four months extra-uterine pregnancy; gestation sac in right broad ligament; fœtus abstracted alive.*—The patient, aged 28 years, had been married for seven years and had had two children; the last child was born two years previously. Three months ago the patient missed a menstrual period and about the time when the second period was due she was suddenly seized with severe pain in the abdomen, and 24 hours later she remarked that she had come unwell. This discharge continued for seven days and was looked upon as being an ordinary menstrual discharge. During the first day of this discharge a piece of membrane was passed. Four weeks later there was for one day only a slight show and I was asked to see her because she had for five weeks complained of general discomfort in the abdomen. The breasts were characteristic in appearance and colostrum was readily obtainable from both.

Operation.—A living fœtus was extracted from a sac in the right broad ligament. It showed signs of life for nearly 20 minutes after it had been severed from the placenta. The placenta was stripped from the sac and removed. There was free hæmorrhage and several large vessels had to be ligatured. This sac was stitched with deep and superficial catgut sutures. It was not incorporated with the abdominal wall. The latter was closed in three layers.

CASE 10. *Four months extra-uterine pregnancy; gestation sac in right broad ligament; fœtus abstracted alive.*—The patient, aged 30 years, had been married for seven years, and had had one child; the child was born six years previously. Three months ago whilst the patient was on her way to England in a steamship she was suddenly seized with severe pain in the abdomen and became collapsed. She had then gone 14 days over her usual time for being unwell. On the day of the pain there was a "slight show of blood," but on the following day the patient had quite recovered from her indisposition and seemed in her usual health. Two months later she had a similar attack of pain, and again became collapsed and 14 days later still she had another attack and in this there was also marked signs of collapse. On the day succeeding each of these attacks she, however, seemed to be fairly well. With the exception of the slight show of blood on the occasion of the first attack of pain there had for four months been complete amenorrhœa. The breasts were suspicious of pregnancy but no colostrum could be obtained from them.

Operation.—The fœtus lived for nearly 15 minutes after it was removed from the mother's body. The placenta was stripped from the sac and removed. Several vessels were ligatured. The sac was closed with deep and superficial catgut sutures. It was not incorporated with the abdominal wall. The latter was closed in three layers.

CASE 11. *Four months extra-uterine pregnancy; gestation sac in left broad ligament; pus in and about sac; fœtus dead.*—The patient, who was aged 31 years, and had been married for six months, had had no child and no miscarriage. Since the week before marriage there had practically been complete amenorrhœa. Three months after marriage the patient was suddenly seized with severe abdominal pain, sickness, and diarrhœa. This attack was by the patient herself attributed to something she had partaken of as food. For one month she had observed occasionally a slight hæmorrhagic discharge from the vagina. During this month the temperature had varied from 99° F. in the morning to 102° and sometimes 103° in the evening. The breasts were not characteristic in appearance but colostrum could be obtained with difficulty, however, from both.

Operation.—A four months fœtus in an advanced state of decay was removed from a sac in the left broad ligament. The placenta, in a very degenerate condition, was removed. The sac tore readily, even when handled gently; with great difficulty it was stitched to the abdominal wall. It was drained.

CASE 12. *Three and a half months extra-uterine pregnancy; gestation sac in left broad ligament; fœtus dead.*—The patient was aged 34 years and had been married six years. She had had one child, the birth having taken place three and a half years previously. For four and a half months there had been complete amenorrhœa. About seven days after the second menstrual period was missed the patient had a severe attack of abdominal pain, and since that she had had five or six similar attacks. When she considered herself three and a half months advanced in pregnancy "a fleshy piece," which no doubt was decidual membrane, was without any hæmorrhagic discharge expelled from the genitals. During the two weeks preceding operation the temperature had varied from 99° F. in the morning to 101° in the evening. There was nothing to note about the breasts.

Operation.—The fœtus and placenta were removed from a sac in the left broad ligament. In the placenta there were the evidences of two or three old extravasations of blood into its substance. The sac was stitched to the abdominal wall and drained.

This is the only case of extra-uterine pregnancy in which I have detected old extravasations of blood in the substance of the placenta, and in this case these no doubt caused the death of the fœtus.

CASE 13. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 29 years, had been married eight weeks. She was unwell seven days before marriage and about 14 days after marriage she was suddenly seized with severe abdominal pain, which was most acute in the left hypochondriac region. In this attack the patient fainted. On regaining consciousness she detected a hæmorrhagic discharge from the genitals and this had persisted for six weeks. During these six weeks she had complained more or less of abdominal pain but she had had no recurrence of the very severe pain.

Operation.—There was free blood in the peritoneal

cavity. There was a large amount of clotted blood in the pelvis confined by adhesions. The left tube was distended with crummy blood. No embryo could be detected, but under the microscope villi were recognisable.

CASE 24. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 31 years, had been married four months. She was twice unwell after marriage. She then missed a period. 14 days later she was seized with severe abdominal pain and started losing. The hæmorrhagic discharge had now persisted for one month. Seven days after the first attack of pain the patient had another even more severe than the first. When I saw her the pulse numbered 120 per minute and the temperature was 98° F. Colostrum was obtainable from both breasts.

Operation.—There was a large quantity of recent blood clot in the pelvis confined by adhesions of omentum and gut. The left tube was distended with blood clot and in a more globular portion of the distended tube an embryo of about six weeks was detected.

CASE 15. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, who was aged 29 years and had been married 12 months, had had no child and no miscarriage. She consulted me because she had considered that ten weeks previously she had miscarried, being then seven weeks pregnant and the external hæmorrhage had never abated. During these ten weeks she had complained of pain in the right iliac region but this had never been severe. When the hæmorrhagic discharge first made its appearance "a fleshy piece" was passed. This probably was a piece of decidual membrane and it was the passing of this piece after a period of seven weeks' amenorrhœa which no doubt caused the patient to state that she had miscarried.

Operation.—There was a large quantity of recent clot confined in the pelvis by adhesions. The right tube was greatly distended with blood clot. No embryo could be detected but the microscope revealed the presence of chorionic villi.

CASE 16. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient was aged 24 years, had been married for 20 months, and had had one child who was born 11 months previously. The child had not been suckled. The menstrual discharge reappeared six weeks after the confinement and recurred regularly thereafter for three months. A menstrual period was then missed and after eight weeks' amenorrhœa the patient was suddenly seized with severe pain in the lower abdomen and almost simultaneously she observed that she had come "unwell." She consulted me because she had been unwell practically for four months. She had had no recurrence of the severe pain but she had complained more or less of pain in the right iliac region since the attack of four months ago.

Operation.—The bowel and omentum were firmly adherent to the right Fallopian tube, which was distended with blood clot and adherent to the pelvic floor. The tube was torn in the process of extraction and was removed piecemeal with the clot.

CASE 17. *Internal hæmorrhage consequent upon an extra-uterine pregnancy which occurred during lactation.*—The patient, aged 30 years, had been married for three years and had had one child, the birth having taken place ten months previously. The child was still being suckled. She consulted me on account of a hæmorrhagic discharge which had persisted for four weeks. Prior to this there had been no recurrence of menstruation since the confinement. When the hæmorrhagic discharge first made its appearance she had a severe attack of abdominal pain and since then she had had two similar attacks of pain.

Operation.—There was a large quantity of free blood in the abdominal cavity which had apparently oozed from the fimbriated end of the left tube. This tube was distended with recent blood clot and in a sacculation near the abdominal end of the tube an embryo of about six weeks was observed.

CASE 18. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 25 years, had been married for three years and had had one child and no miscarriage. The child was born two years previously. Three weeks ago the patient, having gone 14 days over her usual time for menstruating, started losing and this hæmorrhagic discharge had continued ever since. During these three weeks she had had four attacks of severe abdominal pain but she was uncertain whether the first attack of pain preceded or succeeded the appearance of the hæmorrhagic discharge.

Operation.—There was a large amount of blood clot in the left pelvis confined by adhesions between the pelvic and abdominal organs. The left tube was greatly distended with blood clot. Chorionic villi were detected.

CASE 19. *Internal hæmorrhage consequent upon extra-uterine pregnancy with cystic degeneration of the ovary on the opposite side.*—The patient, who was 28 years of age, had been married for four years and had had no child and no miscarriage. Five weeks before coming under my observation this patient, having gone 14 days over her usual period of menstruating, was seized with pain in the lower abdomen and with severe pain in the left hypochondrium. She became very faint and there and then she remarked that she had become "unwell." For five weeks this hæmorrhagic discharge had persisted; she had had no recurrence of the severe pain but all along she had complained more or less of abdominal pain. The temperature was normal and the pulse numbered 110 per minute.

Operation.—There was a large quantity of free blood in the peritoneal cavity. The right tube was distended with crummy clot and in this tube chorionic villi were eventually detected. The left ovary, which was of the size of a closed fist, was cystic.

CASE 20. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 30 years, had been married for four years and had had no child and no miscarriage. Three months before coming under my observation this patient had menstruated as usual. The next period was five days late and on this occasion the discharge continued for 14 days. Since then there had been complete amenorrhœa but during these six weeks she had had three severe attacks of abdominal pain. The temperature was subnormal and the pulse numbered 125 per minute.

Operation.—There had been extensive hæmorrhage from a rupture in the right tube but this extravasation was confined by omentum, which was adherent to the uterus and bladder, and by small gut, which was adherent to the right broad ligament and the pelvis generally. No embryo was detected but chorionic villi were revealed by the microscope.

CASE 21. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, who was 28 years of age, had been married for four years and had had one child and no miscarriage: the child was born three years previously. Four months ago the patient missed a period and became suspicious that she might be pregnant. Three months ago a hæmorrhagic discharge made its appearance and this had continued more or less ever since. During these three months she had complained of pain in the left iliac region but this had never been severe. The temperature was normal and the pulse numbered 84 per minute.

Operation.—The left tube, of about the size of one's wrist, contained blood clot. It was adherent to the pelvic floor and the uterus and small gut were adherent to it. No embryo was found but chorionic villi were detected by the microscope.

CASE 22. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 27 years, had been married for five years and had had one child, the birth having taken place three years previously. She consulted me on account of a hæmorrhagic discharge which had persisted for ten weeks. This discharge came on with severe pain in the lower abdomen and when the patient had gone seven days over her usual time for being unwell. Since the hæmorrhage started she had complained more or less of general abdominal pain but there had been no recurrence of the severe pain. The temperature when I saw her was 103° F. and the pulse numbered 96 per minute.

Operation.—There was free blood in the peritoneal cavity which had apparently oozed from the abdominal ostium of the right tube. This tube, especially towards its fimbriated extremity, was greatly distended with blood clot and it was adherent to the uterus and the pelvic floor. There was nothing to note about the pelvis which would account for the temperature. No embryo was found and no chorionic villi were detected. The embryonic mass had probably escaped into the abdominal cavity and was thus lost.

CASE 23. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 33 years, had been married for six years and had had no child and no miscarriage, but she gave a history presumptive of internal hæmorrhage due to an ectopic gestation 12 months after marriage. The history of the present illness was that three months ago she

had menstruated as usual. When the time for the next menstruation came round there was merely "a show" but four days later a hæmorrhagic discharge made its appearance and this discharge continued for four days. There was again no loss for nearly two months when a piece which evidently was decidual membrane was expelled with a small quantity of blood and this the patient affirmed was a miscarriage. Nine days before the membrane was expelled the patient had a severe attack of abdominal pain and it was because of two recurrences of pain similar to the first that I was asked to see her. The temperature was normal and the pulse numbered 105 per minute. The breasts were not characteristic of pregnancy but colostrum was easily obtained from both.

Operation.—There was a large quantity of blood clot in the pelvis confined by adhesions. The left tube contained blood clot and an embryo of nearly two months.

CASE 24. *Internal hæmorrhage consequent upon extra-uterine pregnancy co-existing with a super-induced uterine pregnancy.*—The patient, who was 27 years of age, had been married for seven years and had had two children and two miscarriages. The last child had been born nearly three years previously. Three months ago the patient, having gone seven days over her usual time for being unwell, began to lose and she continued to lose for 14 days, a little every day. The onset of this discharge was accompanied with severe abdominal pain. Since this attack of pain she had complained more or less of abdominal pain, but there had been complete amenorrhœa for nine weeks. The breasts were not characteristic of pregnancy and colostrum could not be obtained from them.

Operation.—The left tube contained about five or six ounces of recent blood clot. Chorionic villi were detected by the microscope. Four hours after the abdominal section a sac quite intact and containing an embryo of about two months was expelled per vaginam with a hæmorrhagic discharge.

Five months after the abdominal section and abortion this patient again became pregnant; the product of conception was located in the uterus, however, and was safely carried to maturity.

CASE 25. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 28 years, had been married for eight years and had had one child and one miscarriage. The miscarriage happened five years previously. Ten weeks ago the patient missed a period and about midway between this and the next expected period she was suddenly seized with severe pain in the lower abdomen. Two days after this attack of pain she observed a hæmorrhagic discharge from the genitals and since its appearance this discharge had persisted until now. 14 days ago a piece of membrane was expelled and the patient thought that she then miscarried. The temperature was 100° F. and the pulse numbered 96 per minute. There was nothing to note about the breasts.

Operation.—The right tube, which contained a quantity of blood clot, was very adherent in the pelvis. In the tube there was found an embryo of about six weeks.

CASE 26. *Internal hæmorrhage consequent upon extra-uterine pregnancy; cystic degeneration of the opposite ovary.*—The patient, aged 28 years, had been married for nine years and had had no child and no miscarriage. Seven days before coming under my observation a hæmorrhagic discharge had ceased which had persisted for 11 weeks. This hæmorrhage started nine days after the cessation of what the patient considered a normal period. Ever since the hæmorrhagic discharge made its appearance she had complained more or less of abdominal pain. After she had been losing for nine weeks she had a severe attack of abdominal pain accompanied by diarrhœa and sickness. Altogether this attack was troublesome for about 12 hours.

Operation.—There was a large amount of blood clot confined by adhesions in the right pelvis. The right tube had been the seat of the gestation. The left ovary, which was of the size of a large orange, was cystic.

CASE 27. *Internal hæmorrhage consequent upon extra-uterine pregnancy occurring during lactation.*—The patient, aged 35 years, had been married for 10 years and had had five children. The last child, born 10 months previously, was still being suckled. Menstruation reappeared when the baby was seven months old and it recurred the next month. When the baby was eight and a half months old—i.e., 14 days after the cessation of the second menstrual period since the confinement—the patient was suddenly seized with severe abdominal pain, and this she attributed to something she had partaken of in the way of food. She remarked at the same time the appearance of a hæmorrhagic discharge from the vagina. For six weeks practically this hæmorrhagic discharge had persisted and during this time the patient had had two other attacks of severe abdominal pain. The temperature was normal and the pulse numbered 106 per minute.

Operation.—There was a large quantity of blood clot confined in the left pelvis by adhesions. The hæmorrhage had come from the left tube. No embryo was found and the tube was so much damaged that it was hopeless to search for evidence of the chorion.

CASE 28. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 37 years, had been married for ten years and had had three children and no miscarriage. The last child was born five years ago. With the exception of "a slight show" three weeks ago there had been complete amenorrhœa for three months. Five weeks ago and again three weeks ago the patient was suddenly seized with severe pain which lasted on each occasion about half an hour. Since the last attack of pain she had complained more or less of pain in the left iliac region. The breasts were not characteristic in appearance but colostrum was readily obtained from them.

Operation.—The right tube, greatly distended, was separated from adhesions and removed intact. It contained blood clot and an embryo of about two months.

CASE 29. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, who was 32 years of age, had been married for 11 years and had had three children and two miscarriages; the last child was born four years previously. Five weeks ago, at what the patient considered was her proper time for coming unwell, a hæmorrhagic discharge made its appearance and it had continued ever since. During these five weeks she had complained slightly of pain in the left iliac region. The pulse and temperature were practically normal.

Operation.—There was a small quantity of free blood in the peritoneal cavity which had oozed from the left tube. The left tube was greatly distended with blood clot. The microscope revealed the presence of chorionic villi.

CASE 30 (*a*). *Internal hæmorrhage on two occasions consequent upon extra-uterine pregnancies.*—The patient, aged 34 years, had been married for 12 years and had had no child and no miscarriage. For three months before coming under my observation the patient had been losing almost every day. Prior to this she had missed one menstrual period and the hæmorrhagic discharge made its appearance about the time when the second period was due. When the hæmorrhagic discharge first made its appearance the patient had a severe attack of abdominal pain and fainted. Since the first attack of pain she had had two similar attacks. After she had been losing for 14 days a large piece of membrane was stated to have been passed.

Operation.—There was a large quantity of blood clot confined in the right pelvis by adhesions. The right tube contained blood clot and an embryo of about six weeks.

CASE 30 (*b*).—As the history dependent upon the second extra-uterine pregnancy which occurred two years after the first was materially different to that of the first I may here record it. On this occasion the patient had had continuously for one month a hæmorrhagic discharge. No period had been missed and she was quite certain that the hæmorrhage appeared on the day she naturally expected to be unwell. Since the hæmorrhage first made its appearance she had complained of pain in the left iliac region, but she had never had any attack of pain like what she had had two years previously and no membrane had been passed.

Second operation.—The left tube was adherent in the pelvis and was distended with blood clot. No embryo was found but chorionic villi were detected by the microscope.

CASE 31. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 38 years, had been married for 14 years and had had six children. The last child was born 15 months previously and was suckled for 13 months. The menstrual discharge reappeared when the baby was nine months old. For five weeks before the patient came under my observation she had been losing continuously. She had not missed a menstrual period and the hæmorrhage,

she affirmed, started 14 days after her last normal period. When the hæmorrhage started she had a severe attack of abdominal pain and fainted. Two weeks after the first attack of pain she had a similar attack. The temperature was 100·4° F. and the pulse numbered 108 per minute.

Operation.—There was a large quantity of blood clot confined in the right pelvis by adhesions. The right tube contained blood clot. No embryo was detected but chorionic villi were revealed by the microscope.

CASE 32. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 36 years, had been married for 14 years and had had three children and three miscarriages. The last pregnancy was eight years previously. Seven weeks ago the patient, having gone three weeks over her usual time for being unwell, was suddenly seized with severe pain in the abdomen and fainted. When she recovered from this attack she observed that she had come unwell and that she had passed two pieces of a fleshy character; these, no doubt, were decidual membrane. The patient herself considered that she had miscarried when these fleshy pieces were expelled and she consulted me on account of the continuance of the hæmorrhage. The temperature and pulse were practically normal.

Operation.—There was a small amount of blood in the left pelvis confined by adhesions. The left tube was distended with blood clot and towards its fimbriated extremity where the dilatation was most marked an embryo of about six weeks was detected.

CASE 33. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, aged 34 years, had been married for 16 years and had had six children. The last child was born five years previously. Eight days before I was asked to see this patient she had had a severe attack of abdominal pain and the history was that two months previously she had passed something which she considered a product of conception and which no doubt was decidual membrane. As she had gone 14 days over her usual time for being unwell when this piece was expelled she naturally looked upon it as a miscarriage. After passing this piece she lost continuously for three weeks; there was then amenorrhœa for nearly five weeks, when she was suddenly seized with severe abdominal pain and this pain continued troublesome until the time of the operation.

Operation.—There was a large quantity of blood clot confined by adhesions in the left pelvis. The left tube was distended with blood clot. No embryo was detected but the presence of chorionic villi was revealed by the microscope.

CASE 34. *Internal hæmorrhage consequent upon extra-uterine pregnancy.*—The patient, who was 37 years of age, had been married for 17 years and had had 11 children and two miscarriages. The last child was born 16 months previously. For two months the patient had been losing every day. When this hæmorrhage started she considered that was her proper time for coming unwell. She was quite certain she had not missed a period. For four days before coming under my observation she had complained of rather severe pain in the abdomen and especially in the left hypochondrium. The pulse and temperature were practically normal.

Operation.—There was a large quantity of blood confined in the right pelvis by adhesions. The swelling had apparently been tubo-ovarian. The right tube was distended with crummy blood clot. No embryo was detected but the microscope revealed towards the fimbriated extremity of the tube the presence of chorionic villi.

CASE 35. *Internal hæmorrhage consequent upon extra-uterine pregnancy; cystic transformation of the ovary of the vicariously functioning tube.*—The patient, aged 38 years, had been married for 18 years and had had 11 children. The last confinement, which was with twins, took place three and a half years ago. Seven weeks ago, and only four days after the cessation of what the patient considered a normal period, she stumbled over a broom and almost immediately thereafter she observed a hæmorrhagic discharge from the vagina and complained of pain in the right iliac region. For seven weeks the pain and hæmorrhage had persisted. The temperature and pulse were normal.

Operation.—The right tube and right ovary were fixed in the pelvis. The right tube was distended with crummy blood clot and the right ovary was completely transformed into three cysts. No embryo was detected.

At any time during the reproductive life of the woman the ovum after fertilisation may fail to reach its proper habitat—the uterus—and may proceed to develop and may attain maturity in some structure outside this organ. This untoward phenomenon may occur in consequence of the first fruitful intercourse either immediately or some months or years after marriage. It may be observed after a more or less prolonged period of sterility, but we must not assume in any given case that this has been due to natural causes, since it often is found to have been intentional even in the case of a woman who has never before been pregnant. Impregnation may occur during lactation and in such circumstances the product of conception may, as happened in Cases 17 and 27, proceed to develop in some structure outside the uterus. A uterine pregnancy may follow so rapidly upon an extra-uterine pregnancy that they may essentially co-exist, as happened in Case 24.

As is naturally to be expected, the majority of the cases now recorded are cases in which the extra-uterine gestation was early and abruptly terminated by an extravasation of blood due to the rupture of one or more of the physiologically implicated maternal vessels. The cardinal symptoms in such circumstances it will be remarked were pain, especially recurring attacks of pain, and external hæmorrhage. The onset of these two symptoms is usually simultaneous, nor is this to be wondered at as they no doubt are due to the same cause, to the sudden extravasation of blood into the gestation cavity. These are not, however, pathognomonic symptoms, for the same symptoms may be observed in connexion with other derangements of the tube and of the ovary. The pain is generally referred to the lower part of the abdomen but occasionally it is referred to the left hypochrondrium and in such circumstances, especially when associated with symptoms of collapse, the clinicist may be misled and may concentrate his attention upon the stomach. The external hæmorrhage, as in the case of a more or less incomplete uterine abortion, is commonly very persistent and a scrutiny of the above cases will reveal the fact that its first appearance may or may not have been preceded by an unduly prolonged period of amenorrhœa.

In those cases in which the vessels of the vicariously functioning structure adapt themselves efficiently to the process of gestation pain may or may not be a concomitant of the pregnancy, but it is noteworthy that external hæmorrhage is in such circumstances infrequently observed and when observed is usually trivial in amount, and I am convinced that this hæmorrhage comes invariably from the endometrium. The pain is sometimes very severe and is probably due to some derangement of those portions of gut adherent to the active sac.

The escape of decidual membrane from the uterus during the evolution of ectopic pregnancy is not so common as many authors would lead us to believe. Of the 35 cases—36 really—it was observed in ten only. In some of the remainder it is impossible that its presence could have been overlooked; in Cases 3 and 4, to wit, where the amenorrhœa was complete during the nine active months of the pregnancy; in Case 8, where for some unknown reason curettage was resorted to about the seventh week of pregnancy; and again in Case 24, where a uterine pregnancy and a tubal abortion coexisted. The decidual membrane when extruded is not invariably accompanied by a hæmorrhagic discharge; the same thing is noted occasionally in cases of membranous dysmenorrhœa, especially those anomalous cases in which a more or less complete cast of the uterus is expelled midway between the periods.

During the evolution of an extra-uterine pregnancy the breasts are seldom as characteristic in appearance as during the evolution of a uterine pregnancy, but in the former case colostrum can be obtained from them quite as early as in the latter. Morning sickness may be as marked in an extra-uterine as in a uterine pregnancy and the movements of the fœtus may be felt as early in the one case as in the other.

In none of the full-time cases of extra-uterine pregnancy that I have dealt with have the patients referred to pains occurring at or about the ninth month resembling those of labour.

I would here like to emphasise the fact that it is possible for an extra-uterine pregnancy to run its course of nine months without a symptom different from that of a normal pregnancy.

Gordon-square, W.C.

GENERALISED ŒDEMA OF THE FŒTUS.

BY W. W. KING, M.R.C.S. ENG., L.R.C.P. LOND.,
LATE RESIDENT OBSTETRIC OFFICER, BRISTOL ROYAL INFIRMARY.

THE condition of general œdema of the fœtus has been frequently observed both in man and in animals. Ballantyne, in his works on "Diseases of the Fœtus"[1] and "Ante-Natal Pathology,"[2] considers the subject very fully, and from time to time isolated cases have been reported, but as yet the etiology remains obscure. Within a few weeks two examples of this form of fœtal œdema came under my notice and thus provided material for further inquiry. The results attained are chiefly relative to certain changes in the suprarenal tissues and since such changes have not hitherto been described I venture to record them for the use of those who are interested in the subject.

CASE 1.—The patient, aged 32 years, 10-para, was first seen at the Bristol Royal Infirmary on April 16th, 1907, for ante-partum hæmorrhage. She was a healthy, rather stout woman, who had never had any serious illness. Menstruation was regular though copious. Her obstetric history was as follows. Her first child was born in 1894; is now healthy; has a highly arched palate but no other signs of congenital syphilis. The second child was born in the same year and is now healthy. The third child, born in 1896, had "consumptive bowels"—i.e., diarrhœa with blood in the motions—up to the age of three years but is now healthy but has a highly arched palate. The fourth child was born in 1898. The patient had had floodings at the third and fourth months, but she went to term and was delivered of a jaundiced child who died in three days. The fifth confinement took place in 1900 and resulted in the delivery of a macerated eight-months fœtus. The sixth and seventh pregnancies ended in abortions in the fourth month. The eighth child was born in 1902 and is now healthy. The ninth child, born in 1904, was a full-time jaundiced child who died in convulsions on the eighth day. The tenth child was born in 1906; the patient had hydramnios and was delivered of an eight-months macerated fœtus. The patient's husband was a healthy man with no history of syphilis. The history of the present illness showed that the patient had been six months' pregnant when seen on April 16th. There was severe vaginal hæmorrhage. On examination the uterus was found to be larger than normal at full time; no fœtal parts or fœtal heart sounds could be made out; there was no œdema and no albuminuria. Slight vaginal loss continued in spite of treatment up to the 23rd, when labour came on with considerable hæmorrhage. The presentation proved to be a footling and there was no hydramnios. The fœtus, which was delivered without any great difficulty, was markedly œdematous. The placenta was very large, dead white in colour, and very friable. The patient made an uneventful recovery. She became pregnant again five months later, and my successor at the Bristol Royal Infirmary, Mr. A J. Wright, informs me that she was delivered of a seven-months macerated fœtus on April 12th, 1908.

Morbid anatomy of the fœtus and placenta.—The fœtus was of the size of a 12-pound child at term and was in a state of general anasarca, which was most marked in the face where the features were completely obliterated. The skin had a waxy, semi-transparent appearance, subcutaneous hæmorrhages were not present, and there was no marked friability of the tissues. The cord was œdematous. Dissection showed the large size of the child to be due to generalised œdema of the subcutaneous tissue. On microscopic examination of the integument the subcutaneous tissue was found to be loose and œdematous and the vessels were dilated, but there was no thickening of their coats. The abdomen contained 10 ounces of a brownish fluid with no clots or flakes; the specific gravity was 1010, with 0·1 per cent. of albumin, and no clot formed on standing. The peritoneum was normal. The umbilical and hypogastric vessels were distributed in the normal manner. The liver was large, the surface being smooth and the colour normal. Microscopically the edges of the cells were indefinite but the nuclei stained well. There was some round-celled infiltration of the œdematous interstitial tissue; there was no thickening of the vessels. The kidneys were normal except for interstitial œdema on microscopic examination. The suprarenal capsules were about three-quarters of an inch in length and dark in colour—apparently from small hæmorrhages into the cortex. Under the microscope both the cortex and the medulla were disorganised and much enlarged from interstitial œdema and from what at first sight appeared to be hæmorrhages. Closer examination, however, showed that they were very distended capillaries, the areas of dilatation being subcapsular, cortical, and medullary. The œdematous interstitial tissue was crowded with deeply staining small round cells which presented aggregations in various parts. The cortical cells themselves were vacuolated and the protoplasm stained diffusely, but the nuclei stained well. The normal columnar arrangement of the cells was almost absent. No polynuclear cells were present. The medulla was composed of epithelioid cells and large dilated and tortuous capillaries. Sections of the spleen showed a loose arrangement of the splenic pulp, very little muscular tissue, and no Malpighian follicles on the vessels. The bladder contained a little urine. The ureters were normal. The pleural cavities contained a similar fluid to that in the abdomen. The lungs were collapsed. The pericardium contained about a drachm of fluid. The heart and great vessels were normal; the foramen ovale was patent and the ductus arteriosus was of normal size. The thyroid on microscopical examination proved to be identical with a normal six-months thyroid. The thymus was also normal. The brain was soft and diffluent and there were no hæmorrhages present. The placenta when delivered was large, white, friable, and villous, but in 12 hours it had shrunk considerably in size with the loss of a quantity of clear fluid. At the periphery there were some patches of apparently normal placental tissue. On the maternal surface there was some old blood clot. In sections taken from the most degenerated parts the villi simply consisted of a loose œdematous meshwork surrounded by chorionic epithelium, but in less degenerated areas the villi contained capillary tufts. In the chorionic stems the tunica media of the vessels was thickened, but there was no endarteritis.

CASE 2.—The patient, aged 29 years, two-para, had had no miscarriages. She had never been a healthy woman, but had had no definite illness; menstruation was always irregular. Her obstetric history was as follows. The first child, born in August, 1905, has a depressed nasal bridge and bosses on the parietal eminences; she is probably a congenital syphilitic. The second child, born in May, 1906, died at three months (cause not known). When seen on April 30th, 1907, the patient was eight months pregnant and the uterus was of corresponding size; the fœtal heart was heard and the presentation was by the breech. After a short labour she was delivered of an œdematous child who only lived a short time. The œdema, though general, was decidedly more marked in the lower abdomen and legs. It was not so great as in the previous case, but the skin had the same waxy look; subcutaneous hæmorrhages were present. The cord was œdematous, but the placenta was normal. Unfortunately, both the child and the placenta were destroyed through a misunderstanding of my directions, and so I am unable to give any account of their morbid anatomy.

I have been able to collect a few more cases of fœtal anasarca which have been reported in English journals since the issue of Ballantyne's "Diseases of the Fœtus" and the following is a short summary of these cases.

Keith[3] has fully described the anatomy of an œdematous monster with gross circulatory changes, but no clinical details were available.

Russell Andrews[4] reported the case of a woman, aged 28 years, whose first four children were healthy, the fifth being prematurely born, and the sixth œdematous. The last-mentioned only lived a short time. All the organs were normal except the liver which was firm and granular, with pericellular and lobular cirrhosis, together with leucocytic infiltration and thickening of the vessels. The placenta was normal. A second case reported by the same author is of a woman, aged 36 years, who was delivered of binovular twins,

[1] Oliver, Edinburgh, 1892.
[2] Green, 1902.
[3] Transactions of the Obstetrical Society of London, 1900, vol. xlii., p. 99.
[4] Ibid., 1901, vol. xliii., p. 166.

the second of whom, together with the placenta, was œdematous. The liver showed small-celled infiltration "exactly similar to that seen in congenital syphilitic cirrhosis." The placenta was very large and the villi were filled with cells and the vessels obliterated.

Seifart[5] has described the case of a woman who, after three normal confinements, had premature labour induced owing to acute nephritis, and both the fœtus and placenta were dropsical.

Munster[6] has reported the case of a woman who developed œdema before the birth of an œdematous child. No account of the morbid anatomy is given.

MacWatters[7] has also reported a case of fœtal anasarca occurring in a primipara aged 30 years. The patient had albuminuria and casts in the urine; there was no history of syphilis. Labour was difficult owing to the large size of the child and the friability of the tissues. The heart, the kidneys, the bladder, and the liver were normal. The placenta was "soft, friable, and similar to a diffluent spleen." Dr. MacWatters informs me that the patient has since been delivered of three healthy children.

The main conclusions to be drawn appear to be that œdematous children are usually born of women of about the ages of from 30 to 35 years who have had previous abortions or premature stillbirths. The mother's health is rarely good but there is no specific disease associated with this condition. Evidences of syphilis, though generally looked for, have only been found in a few cases. Fœtal anasarca may occur in single or twin pregnancies, and may be associated with hydramnios. The labour is usually premature but the large size of the child often causes obstruction during labour and the friability of the tissues when present renders artificial aid difficult. While the maternal prognosis is good the children are either stillborn or only live a few hours. Lastly, subsequent pregnancies may end either normally or with premature stillbirths or, in a few cases, with more œdematous children.

The causation of this condition is very obscure but the facts at our disposal seem to point to an immediate fœtal and a more remote maternal origin. The almost invariable ill-health of the mother, together with her bad obstetric history, makes it impossible to leave the maternal factor out of account, but seeing that, in many cases at all events, a definite fœtal abnormality has been found which is sufficient to account for the condition it seems more profitable to look primarily for a fœtal causation of the dropsy.

The reported cases may be considered under two headings, first, those in which a definite mechanical circulatory obstruction exists; and secondly, those in which no such condition is present. In the former class would be such cases as a closed foramen ovale,[8] stenosis of the great vessels,[9] absent lymphatic system,[10] or cirrhosis of the liver,[11] and these abnormalities may in themselves be sufficient to account for the anasarca; but in the last-named class we have no such gross changes to guide us, and as a rule no explanation at all has been put forward. Hence in my first case, since no circulatory obstruction existed, a systematic examination of all the organs was made and the only ones showing definite pathological changes were the suprarenals. The disorganisation of these organs, as compared with those of a normal six months fœtus, was very evident. It is of course necessary to exclude post-mortem changes, as the fœtus must have been dead for at least a week before delivery, but the tissue does not present the appearances of disorganisation which might be expected, and the cells take up the stain so definitely that these changes cannot be considered as post-mortem results. The small-celled infiltration of the œdematous interstitial tissue, which was so obvious in the suprarenals, was not present in the other organs or tissues except to a slight extent in the liver. In the adult the suprarenal cortex has been credited with the function of neutralising certain toxic products of metabolism, and in view of the large size of the cortex of the fœtal suprarenal it is probable that it has some similar function to perform. These changes in the suprarenals have suggested that some direct relationship may exist between them and the production of the œdema. Were it found in the majority of similar cases that these organs presented pathological changes it might be possible to attribute the œdema to the action of certain unneutralised products of metabolism upon the fœtal capillary endothelium. In such cases the œdema of the fœtus would be considered to be of toxic origin.

I am indebted to Professor Walter C. Swayne, obstetric physician to the Bristol Royal Infirmary, for his permission to publish these cases. I also wish to express my thanks to Professor I. Walker Hall, pathologist to the Bristol Royal Infirmary, for his opinion on some of the sections and for other valuable aid.

Bath.

[5] American Journal of Obstetrics, 1899, vol. cxxxix., p. 127.
[6] THE LANCET, Jan. 25th, 1902, p. 224.
[7] Stethoscope, vol. iv., p. 70.
[8] Lawson Tait: Transactions of the Obstetrical Society of London, 1876, vol. xvii., p. 307.
[9] Pott: Jahrbuch für Kinderheilkunde, Band xiii., p. 11.
[10] Smith and Birmingham: Journal of Anatomy and Physiology, vol. xxiii., p. 532.
[11] Gazetta Medica di Torin, No. 2, p. 21.

A CASE OF DOUBLE ABDOMINAL HYDROCELE.

BY OWEN RICHARDS, M.A., M.D., M.CH. OXON., F.R.C.S. ENG.,

SURGEON TO KASR-EL-AINY HOSPITAL, CAIRO, AND PROFESSOR OF CLINICAL SURGERY IN THE EGYPTIAN GOVERNMENT MEDICAL SCHOOL.

I HAVE thought it worth while to report this case because it is a very well-marked example of a condition which has led at times to difficulties in diagnosis. It is referred to with two figures in von Bergmann's recent "System," but otherwise it receives hardly any notice in those text-books which I have been able to consult, and its treatment none.

A Soudanese, aged about 45 years, was admitted to the Kasr-el-Ainy Hospital for abdominal tumour. He said that he noticed nothing till a month ago; he had since had itching of the scrotum, vague pains and numbness in the left leg, frequent micturition (perhaps due to pressure on the bladder), and gradual swelling of the scrotum and abdomen. The swelling began in the bottom of the scrotum on the left side and extended upwards; it was shortly followed by a similar swelling on the right side. There had been no pain and no history of strain, injury, or syphilis. This history was, of course, unreliable, especially as regards dates.

On examination there was a large hydrocele on the left side, extending upwards into the internal abdominal ring. At its lower end was a projecting pouch and where this joined the main mass a hard tender lump could be felt, apparently the testis. On the right side was another hydrocele, consisting of three portions. Of these one filled the scrotum and the second extended superficially two inches above Poupart's ligament. The third filled the iliac fossa and extended deeply across the middle line, reaching just above the umbilicus. Fluctuation was free between all three and on contracting the recti the third could no longer be felt, while the other two became tense. The scrotal sac had several hard plates in its walls.

At the operation the left sac, which held 32 ounces, was found to reach just within the internal abdominal ring. The testis and cord were dissected from it, the sac removed, and the canal closed by Bassini's method. On the right side the sac held 55 ounces of fluid, which, like that in the other, was turbid with cholesterin. The superficial part lay beneath the tendon of the external oblique, which was stretched and thin. This and the scrotal portion were separated and the cord and testis preserved. It was then found that the whole of the deep sac could gradually be pulled down and stripped from the peritoneum (which was not opened) through the internal ring. When this had been done the whole hand could be passed through the ring into the abdomen, up to the division of the aorta, pushing the peritoneum in front of it. The space left by the sac lay between the peritoneum and the abdominal wall. The peritoneum came down fairly well to obliterate it, but a certain amount of dead space was left which was drained by a separate incision. The ring was then narrowed as on the other side and the tendon of the external oblique reefed over it. The drainage-tube was removed after two days. The only interruption to healing was a small subcutaneous abscess which formed after some time round one of the sutures in the external oblique and closed rapidly on its removal. In the sac removed from the right side, in addition to the pouches mentioned above, there was found one shaped like a flask, with a circular calcified

tubular opening admitting the finger, running for about two and a half inches upwards and outwards from the internal ring, deep to the parietes, and separate from the main abdominal sac (O in illustration).

Several views have been advanced as to the way in which these sacs arise; they will be found mentioned in Mr. J. Lacy Firth's paper. According to the simplest of these, which is endorsed by Jacobson, Réclus, and others, the abdominal sac is merely a lateral bulging of the upper part of the processus vaginalis. For, given a processus which is patent from testis to internal ring, any increase of pressure (as in the case of a varicose vein) will not only widen it but lengthen it, so that it projects in both directions, downwards

A marks abdominal portion of sac much shrunk. O, Opening of pouch. I R, Level of the internal ring. C, Calcareous plates in scrotal portion of sac.

between the legs and upwards into the abdomen. This stage is illustrated by the left side of this case, where the upper end of the sac formed a blunt projection into the abdomen. With continued increase there will be produced lateral bulgings wherever the wall is weaker than elsewhere or the outside pressure less. Such secondary pouches are common in large scrotal hydroceles; one existed in the left side of the scrotum in this case. Two such pouches seem to have been formed high up on the right side, one beneath the external oblique, the other within the abdomen. The small pouch with the calcified annular opening which lay just inside the ring might perhaps be considered as the original upper end of the processus, prevented from sharing in a general dilation by an early calcification of its walls. Anyhow, the fact that the sac lay in front of the peritoneal bag is against its having originated in the tract of the gubernaculum, which lies behind. Mr. Lacy Firth refers to 25 cases of this condition, 18 foreign collected by Villeneuve and seven British. Lieutenant-Colonel J. Lewtas has since published one, and Captain Herbert describes one which he says is the third which has occurred at his hospital. My colleague, Mr. F. C. Madden, tells me that he has met with two cases in this hospital. Probably the condition is not really very rare, especially in those countries in which large hydroceles are common. I have only been able to consult a very few of the recorded cases, but in more than one of them the diagnosis has only been made at operation, and it is possible that a good many others escape recognition or are simply tapped.

As regards treatment, injection is dangerous and tapping merely palliative. The choice lies between drainage and extirpation of the sac. Drainage may succeed in a case where the sac is small and can be packed to the top, more especially if, as in the older cases, it suppurates. But a big sac cannot be filled with packing, and on the analogy of scrotal hydrocele one would confidently expect it to refill so long as two uninjured serous surfaces are left opposite one another. In Colonel Lewtas's case, treated by drainage for nine days, there was apparently no reaccumulation when the patient was discharged after three weeks. But in this case a collection of two and a half pints was only recognised in the course of operation, and it is unlikely that the accumulation of 12 days would be any more evident. At any rate, even if drainage is likely to prevent recurrence, extirpation is certain to.

As regards the difficulty of getting away the whole sac, I was prepared in my own case to meet with a good deal and expected to have to divide the abdominal muscles. As a matter of fact, it was perfectly easy. The same seems to have been the experience of Mr. Lacy Firth, who removed a large sac easily and entirely through a much smaller ring—one which only admitted two fingers. So clearly the size of the sac and the narrowness of the ring need not mean difficulty, and it seems worth while for the surgeon in such cases to try whether the sac cannot be stripped out in this way before dividing the abdominal wall or resigning himself to drainage.

References.—**Lacy Firth**: Brit. Med. Jour., Nov. 16th, 1901 (case and references). **Lewtas**: THE LANCET, Feb. 25th, 1905, p. 489 (case). **Herbert**: Brit. Med. Jour., April 22nd, 1893 (case). **Holmes and Hulke's System of Surgery**, vol. iii., p. 492 (two cases).

Cairo.

A CASE OF CONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS TREATED MEDICALLY.

BY NORTON B. CLOWES, M.R.C.S. ENG., L.R.C.P. LOND.

THE baby (a boy) was born on Nov. 24th, 1907, the birth being quite natural. The parents were quite healthy; the mother had had three previous confinements, two girls and one boy, all of whom were very healthy children, and as the mother was unable to nurse them they were all brought up from the first on Allenburys food and all thrived well on it. This baby weighed 11 pounds at his birth and was in every way one of the healthiest infants it was possible to behold. As was the case in the other children feeding was commenced on the second day with Allenburys No. 1 food and for the first fortnight, although he did not increase in weight, he appeared fairly comfortable, a little restlessness and flatulence being the only troubles. From this time to the eighteenth day (Dec. 12th) he began being very uncomfortable after his feeds, had a good deal of pain, and was slightly sick once or twice in the 24 hours. This sickness rapidly became worse, taking the form of vomiting of whole feeds almost immediately after they had been swallowed, once or twice in the day or perhaps missing a day and then bringing up feeds three or four times in the 24 hours. Even with this he did not appear to have lost much flesh, but on weighing it was found he had lost 5 ounces on Dec. 15th (his twenty-first day). As the vomiting had become very troublesome he was put on a mixture of milk sugar, 2 ounces dissolved in 25 ounces of boiling water (strained), with 2 ounces of milk and 3 ounces of cream, and 1½ ounces of lime water added. One and a half ounces of this were tried every two hours and for a day or two the baby seemed better. The sickness returned, other foods were tried, and on Dec. 20th his weight was 10 pounds 6 ounces. He had become very constipated; he only had very small motions of soft, brown, gelatinous-looking material, with a few very small curds in them. On the 26th his weight was 10 pounds and he was put on

humanised milk. Pyloric trouble was suspected, but on examination there was no marked distension of the epigastrium but a general fulness of the whole abdomen. There was no gastric peristalsis visible and the pylorus could not be felt on palpation. The humanised milk appeared to suit him for a day or two, but all the same he lost flesh, and on the 30th his weight had decreased to 9 pounds 7 ounces; frequent attacks of vomiting came on again and scarcely any motion passed, there being also great scarcity of urine. He was then put on hydrargyrum cum creta ¼ grain, pulvus rhei ½ grain, and sodæ bicarbonas 1 grain twice daily, and sodæ citras 1 grain in each ounce of his food. On Jan. 2nd there was no improvement in his condition and vomiting continued. On most days he was sick from two to five times, bringing up from two to three ounces each time. He began to look extremely pale and was visibly wasting. He was put on peptonised cow's milk and boiled water, 1 to 3 parts, with a little white sugar, 2 ounces being given every two hours. On the 4th, since the last note the patient had only been sick twice in three days, but he had lost flesh. The pulse was 120 and the temperature was 98·4° F., and on examining him with Dr. C. M. Hinds Howell, who kindly saw him with me, we could detect a small peristaltic wave travelling across the epigastric region from the edge of the patient's left ribs downwards to the right; also on deep palpation the indurated pylorus could be felt, of about the size of the end of a thumb; the lump was located, one inch above and a little to the left (the examiner's left) of the umbilicus. The question of treatment by gastric lavage was discussed but we decided to wait a day or two as the sickness had been less since taking the peptonised milk food. On the 5th there was more sickness again and the patient was not so well; his weight was 9 pounds 5 ounces. Dr. R. Hutchison saw him with us and confirmed the diagnosis and advised gastric lavage, once daily at first and more frequently later if no improvement took place; he was to continue the peptonised milk food with tr. opii m. ½ just before each meal. On passing the stomach tube the first time there was a violent expulsion of food and flatulence, also a quantity of slimy mucus; a weak solution of sodæ bicarbonas and water at 105° was used for washing out the stomach. The patient was certainly relieved and was in less pain for a few days after the lavage was commenced but on the 8th he became worse again, he had two severe convulsions that day which left him in a very feeble condition, he had a very pale colour, slow pulse, cold extremities which were with difficulty made warm, shallow respirations, the anterior fontanelle became depressed, and he was faintly crying most of the day. A glycerine suppository acted on the bowels, the motions being small, hard, and lumpy. Three minims of brandy every third hour were ordered. On the 9th the patient's condition had not improved, vomiting continued frequently, and a rectal injection of saline solution was ordered daily, 5 ounces of which were retained. Feeding commenced 1 ounce each hour, with a small pinch of somatose in every third bottle. On the 10th his weight was 9 pounds 3 ounces. On the 12th whey food, 1 ounce hourly, was tried; his weight was 9 pounds. On the 13th he was sick six times in 24 hours, the peristaltic waves were of great size, easily seen and felt, and the pylorus was now easily felt in the same position as above noted; asses' milk was ordered and tried. On the 14th he had much more sickness. His weight was 8½ pounds (rapid loss of 7 ounces). On the 16th he was put on peptonised milk again and virol half a teaspoonful in water three times in 24 hours and hot fomentations were to be kept applied to the abdomen. On the 19th the patient continued losing flesh (weight 8 pounds 2 ounces). A nurse was engaged from Great Ormond-street and lavage was commenced twice daily. On the 22nd there had been much less sickness the last two days. A right inguinal hernia came down which was kept up by a wool pad. From this time to Feb. 2nd he continued to lose weight and was down to 7 pounds 13 ounces, and he had developed a typical expression, hollow-eyed, emaciated face, with extreme transverse wrinkling of the forehead, and a distinct ridging of the sutures of the skull, giving the impression that the skull bones had actually overlapped each other, and the scalp and eyebrows became affected with a yellow seborrhœic condition which was with difficulty kept under by treatment.

From this date, Feb. 2nd to 26th, he was fed on the peptonised milk (one-third and two-thirds), 1 ounce and 1½ ounces alternately, and three feeds of virol. Three minims of brandy were given every three hours. A daily saline injection was given. This was not always all retained but even when not retained had a beneficial effect and usually brought away a small motion and the body was well rubbed with cod-liver oil twice daily. There was not quite so much vomiting, usually from two to four times in the day. Each time the tube was passed into the stomach, even when not directly after a feed; the stomach always contained from 2 to 3 ounces and sometimes more of food and slimy mucus. The patient just continued to live on but did not put on any flesh or appear stronger. The pylorus was felt in the same position but the stomach was lower down, the peristaltic waves were seen traversing the abdomen just below the umbilicus, and at times the whole shape of the organ could be well seen, with a deep depression just below the ensiform cartilage. On March 4th there was some signs of slight improvement. During the last few days there had been one or two small solid motions passed. Sickness was rather less. The patient had slept well and been much more comfortable in every way, though his appearance continued the same, and he had only put on 3 ounces in the four weeks (8 pounds 2 ounces). Increase in quantity of food, or the addition of cream, and small changes in feeding were occasionally tried but without success. Lavage was continued twice daily, as the stomach residuum continued at about 3 ounces and he was always more comfortable after the tube had been passed. On the 23rd his weight had increased to 8 pounds 9½ ounces. On April 8th his weight was 9 pounds 5 ounces. The patient looked better and began taking more notice of things and people and he had been passing a daily fairly healthy motion. He was taking two ounces of milk every 2 hours with a small quantity of cream in alternate bottles. On the 21st he had improved considerably since the last note, he was sick only once or twice a week, and his weight was 9 pounds 4½ ounces. Gastric peristalsis was still visible, but the pylorus was very indistinctly felt, apparently owing to the greater thickness and strength of the abdominal muscles, but what I could feel of it gave the impression that it was the same size but softer than it had previously been. The opium and the fomentations were stopped and also brandy. On the 27th the pylorus could not be felt; there had been no sickness for a week. The residuum was less. Lavage was ordered once daily. His weight was 10 pounds 7 ounces. He had been taking for the past 12 days 4 parts milk and 2 of water, with a little cream in alternate bottles. On May 3rd he had just gained 2 ounces on the weight at birth (11 pounds 2 ounces). Lavage was continued once daily till May 18th and then gradually left off, and afterwards, though occasionally sick, he did not bring up any large quantity. From this time he got on well, but on June 1st he was noticed to be showing signs of slight rickets, and the peptonised milk was stopped and ordinary cow's milk substituted. His weight on June 8th was 13 pounds 12 ounces, and by July 28th he was up to 17 pounds 5 ounces, so was not very far behind the average weight for children of his age. The hernia from which he suffered had not been down for several weeks, the canal being probably filled in with fat and so effected a cure.

I have abstained from giving very frequent or daily accounts of the patient's condition for fear of wearying readers of these notes, but all through February his weight fluctuated slightly, sometimes going up a few ounces and giving hopes of recovery, only to be lost again a few days later. The vomiting likewise sometimes amounted to six times and on other days it only occurred once. Even after the vomiting abated and he was taking a liberal supply of food and the bowels had begun to act properly it was a long time before he really commenced to look better and put on weight with any rapidity. Had it not been for the "free hand" given by the parents and having two excellent nurses to carry out treatment I fear there would have been little chance of our small patient surviving.

Reading.

TIVERTON (DEVON) SEWAGE WORKS.—A Local Government Board inquiry was held at Tiverton on August 13th into the application of the local town council to borrow £2600 for works of sewerage and sewage disposal.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

PERFORATED GASTRIC ULCER; PATIENT SEEN ALMOST IMMEDIATELY; OPERATION; RECOVERY.

BY SYDNEY VOSPER, M.R.C.S. ENG., L.R.C.P. LOND.,
HOUSE SURGEON AT THE METROPOLITAN HOSPITAL.

A WARD maid, aged 21 years, at the Metropolitan Hospital was suddenly seized with acute abdominal pain while drinking a cup of tea on April 21st, 1908, at 4.30 P.M. She had only occasionally suffered from a little indigestion but had never shown symptoms suggestive of gastric ulcer and had been taking ordinary food up to the time that she was taken ill. She was seen within a few minutes of this attack in her room where she was lying on the bed with both legs drawn up and in much abdominal pain which she referred more especially to the "pit" of the stomach. The face was flushed and the forehead was wet with perspiration; the tongue was slightly furred; the pulse was 86 and the temperature was 97·4° F.; and there was no vomiting. Nothing abnormal was found in the heart or lungs. In the abdomen the movement was much diminished; the muscles were exceedingly rigid, being rather more so over the right rectus than over the left, and there was marked tenderness over the pyloric end of the stomach. The liver dulness at that time began at the sixth rib in the nipple line and extended down to the costal margin. There was no dulness in the flanks or in the right iliac fossa, the abdomen being resonant all over. Nothing abnormal was felt per rectum.

The case was then put under special observation in the ward and hot fomentations were applied to the abdomen. One hour later (at 5.30 P.M.) the pain was still acute and the abdomen was very rigid, but the liver dulness was beginning to disappear and the abdomen was a little more resonant. There were no vomiting and no increase in the pulse-rate. The patient was seen at intervals and presented much the same signs and symptoms except that the pain was a little easier at times. Five hours after the onset (at 9.30 P.M.) it was noticed that the liver dulness had entirely disappeared and the abdomen was hyper-resonant and as rigid as before. The patient was still in much pain; the pulse was now 96, but there was still no vomiting. A leucocyte count was carried out, and the result was 15,000 leucocytes to the cubic millimetre. An operation was then performed by Mr. C. Gordon Watson.

A longitudinal incision was made in the middle line in the epigastric region and the structures were divided and separated down to the peritoneum. When the latter was opened some free gas and fluid escaped. The stomach was carefully pulled out through the abdominal wound and presented immediately a perforation about one-sixth of an inch in diameter on the anterior surface of the stomach, near the lesser curvature, about half an inch from the pylorus. The ulcer was buried by several Lembert sutures. The abdominal cavity was irrigated with normal saline solution and drained by tubes put in the right flank and suprapubic region. The operation lasted 20 minutes.

As regards the progress of the case and the after treatment the patient made an uninterrupted recovery. Nutrient enemata were given for 12 days and on the third day small mouth feeds of albumin water were commenced. Then gradually the feeds by the mouth were increased and the nutrient enemata were discontinued. After 18 days (on May 9th) she commenced to take ordinary diet and was sent to a convalescent home in the country. She has since returned looking well and now has resumed her ordinary duty in the hospital.

The case proves interesting in that (1) she was seen almost immediately after the perforation; (2) there was no vomiting up to the time of the operation and the pulse never rose above 100; and (3) the diminishing liver dulness up to complete loss. For permission to publish this case I have to thank Mr. C. Gordon Watson, under whose care the patient was.

A CASE OF IPECACUANHA POISONING?

BY R. T. HARRISON, M.R.C.S. ENG., L.R.C.P. LOND.

I THINK that perhaps the following case may be of interest to the readers of THE LANCET on account of the rareness of the (supposed) cause of death.

A coloured "boy," about 20 years of age, was seized at about 7 P.M. with violent and uncontrollable vomiting. I saw him at about 7.20. He was vomiting and retching violently; the extremities were somewhat cold and damp with perspiration. The pulse was very rapid. He complained of pain in the abdomen and had occasional slight cramps in the abdominal muscles. I remained with him about half an hour, the vomiting occurring about every three minutes. I gave him large quantities of water continuously with a view to washing out the stomach; he also had a little brandy which he did not retain long enough to do him any good. From the symptoms, strongly supported by a knowledge of the "boy's" habits, which are related below, a diagnosis of acute irritant poisoning was made. He denied having taken anything beyond one small tot of "dop" with two friends, who suffered no ill after-effects. The first portion of the vomit had been thrown away before my arrival but I managed to secure about half an ounce from the bottom of the chamber. It showed nothing distinctive in smell or appearance (the vessel had been rinsed out with water and contained only a little sticky mucus). As his condition was not improving—in fact, by this time he showed alarming symptoms of collapse—under such treatment as could be applied at the time and place—i.e., warmth to the extremities, stimulants, and plenty of hot water to wash out the stomach—I hurried to the surgery (about 15 minutes' walk distant) to prepare something for him. I had been there about five minutes when a message came to say that he was much worse; he died at 8.30 P.M., one and a half hours after the first symptom.

At the post-mortem examination, which was made about 14 hours after death, we found subacute congestion of the stomach and the first two feet of the intestine. The stomach with its contents was excised and preserved in alcohol. The other organs were normal; the heart was in diastole; the brain was not examined. There was a good deal of correspondence between the local resident magistrate and headquarters and additional evidence was called for, but finally it was decided that an analysis of the stomach contents and vomit was unnecessary and a verdict was returned of death through misadventure.

Now as to deceased's habits. He was employed as stable "boy" by my principal, whom I was assisting, and had free access to the dispensary. He had frequently been in trouble for alcoholism. He had been in the habit of stealing the rectified spirit from the dispensary until he was caught in the act, after which the spirit was put out of his reach. Next we missed an unopened Winchester bottle of tinctura aurantii, then the quinine wine disappeared rapidly until we had the bottles relabelled "Vin. Quinæ, *Poison*." On the morning after the patient's death we carefully examined all the bottles and came to the conclusion that the half Winchester bottle of vinum ipecacuanhæ had been lowered about two inches; apparently he chose his drinks by smell, a somewhat dangerous proceeding in a well stocked dispensary. A bottle of vinum antimoniale was properly labelled poison and was untouched. It came out in evidence that the "boy" had left his work at 6 P.M. with the other stable boys as usual but had returned almost immediately "for something he had forgotten."

I shall be much obliged if the readers of THE LANCET can give me any reference to poisoning by ipecacuanha in the literature. What further treatment could have been employed? I take it that the fatal vomiting was due to the central action of the ipecacuanha and that the congestion of the stomach, which was certainly an insufficient cause of death, was due simply to the local irritation of the drug. One is always taught that ipecacuanha is its own antidote, but apparently if taken in sufficiently large doses enough can be absorbed into the system to cause death.

Grahamstown, South Africa.

Reviews and Notices of Books.

A Text-book of Pathology. With a Section on Post-mortem Examinations and the Methods of Preserving and Examining Diseased Tissues. By FRANCIS DELAFIELD, M.D., LL.D., Emeritus Professor of the Practice of Medicine, College of Physicians and Surgeons, Columbia University, New York; and T. MITCHELL PRUDDEN, M.D., LL.D., Professor of Pathology and Director of the Department of Pathology, College of Physicians and Surgeons, Columbia University, New York. Eighth edition, with 13 full-page plates and 650 illustrations in the text in black and colours. London: Baillière, Tindall, and Cox. 1908. Pp. 1057. Price 25*s.* net.

IN reviewing some of the previous editions of this Text-book of Pathology we have commended the general character and scope of the work. This, the eighth edition, has been considerably revised, and a great deal of recent work is incorporated in the text. Dr. Delafield, the senior author, no longer shares in the preparation of the work, but Dr. Prudden has had the assistance of Professor Francis C. Wood, who has revised the section on the blood, which was originally contributed by Professor J. Ewing, and has written the section on malaria. The chapter on the nervous system in the part devoted to special pathology has been revised by Professor F. R. Bailey. The arrangement of the matters dealt with has been altered in this edition and the volume is now divided into three parts, of which the first is devoted to general pathology. This part has been expanded and is a very readable and clear presentation of the subject. The various pathological processes are carefully described and the effects of animal and plant parasites are discussed. The chapter devoted to the relations of micro-organisms to disease is worthy of special commendation. The problems of infection and immunity are described in such a way as to be intelligible and interesting, and, indeed, the chapter gives one of the clearest presentations of the subject with which we are acquainted. Ehrlich's side-chain hypothesis and its developments are clearly set forth and illustrated by useful diagrams. The characters of the opsonins are also dealt with in some detail. In considering the various infectious diseases, the nature and properties of the specific infective agents are described in so far as these are known and their pathological effects are carefully worked out. The chapters on malformations and on tumours are also worthy of note; in the latter the biological problems involved in the growth of tumours are discussed and some of the most important theories in regard to the etiology of new growths in general are outlined.

The second part of the book is concerned with special pathology and is divided into chapters, each dealing with one of the chief systems of the body. As a reference handbook affording accounts of the principal lesions affecting the various systems and organs we have found this part most satisfactory. The chapter dealing with the respiratory system may be mentioned as being thorough and as being most copiously illustrated with reproductions of photographs of sections through the whole of one lung or parts of it of almost natural size. Some of the more obscure and rarer conditions are also referred to, in illustration of which may be mentioned the various forms of chorion epithelioma, of which a succinct and lucid account is presented.

The third part deals with the method of making post-mortem examinations and the methods of preserving and examining pathological tissues. The directions given are practical and the special methods of preparation suitable for the various organs are indicated.

The book is lavishly illustrated and the quality of the illustrations is very good; they are such as are likely to be of assistance in the post-mortem room and laboratory. The book is well produced and the style in which it is written is easy and clear. Dr. Prudden writes well and this, the eighth edition of the book, is one which we can cordially recommend as a useful and scientific presentation of the most important facts in regard to the pathology of disease.

A Text-book of Physiology for Medical Students and Physicians. By WILLIAM H. HOWELL, Ph.D., M.D., Professor of Physiology in the Johns Hopkins University, Baltimore. Second edition. London and Philadelphia: W. B. Saunders Company. 1907. Pp. 939. Price 18*s.* net.

THERE is no fundamental change either in the arrangement or the scope of this most excellent and up-to-date text-book of physiology, to our mind one of the best, most readable, suggestive, and withal critical of the modern text-books on this subject. Additions and changes have been made freely throughout the text, but these are so counterbalanced by elimination of such material as could be spared that the size of the book is practically unaltered, being increased by about 30 pages. A number of new figures have been introduced. The physiology of mind and nerve is dealt with tersely, yet sufficiently, in about 50 pages, and is supplemented by a generous amount of excellent illustrations—clear, well printed, and most useful.

Many references to important memoirs are given in foot-notes, but in Chapter II., which deals with muscle plasma, our knowledge of which begins with the investigations of Kühne, it might be useful to the junior student to know the date of Kühne's work. Many other historical dates are given, but this one is omitted. The term "protein" is adopted throughout instead of "proteid." We are familiar with the terms "plain" and "smooth" muscle, but to us "long striated," as applied to smooth muscle, is not so familiar. We are getting used to the appearance in print of fiber, carbon dioxid, centers, hæmoglobin, hemin, and so on, but we prefer the English form. We are glad to see a paragraph on the uses of the inorganic salts in muscle, important as they are in maintaining osmotic pressure and thus controlling the exchange of water with the surrounding lymph, and for the study of normal structure and excitability of living muscular tissue. On p. 74 there is an interesting account, with a well-balanced criticism, on the uses of the myelin sheath of nerve fibres.

An excellent presentment of the origin, inception, and validity of the neuron doctrine is given in Section II., a doctrine which has been found both acceptable and helpful. Some physiologists and pathologists, such as Nissl and Bethe, have attacked its most fundamental feature—viz., that each neuron represents an independent anatomical element and contend that the neuro-fibrils pass through nerve cells and form a "continuum" through which nerve impulses pass without a break from cell to cell. For obvious reasons the author makes use of the neuron doctrine. The complex facts of spinal physiology are admirably set forth and indeed the titles of some of the chapters, both here and in other sections—e.g., the one on the eye—are most suggestive. There is a very readable account of the recent advances made by the physiologists in the United States which for the most part appear only in American journals. The chief advances will be found in the chapters devoted to the nervous system. We would specially point out how the areas of the cortex cerebri, as defined and mapped out by Flechsig, both from an anatomical and functional point of view, are brought into relation with pathological phenomena. Nor is the author neglectful of the contributions made to our knowledge of the cortex cerebri by English observers. He gives an account of the advances recently made on this

subject by Campbell and also by Bolton. The chapter on the cerebellum is thoughtful and suggestive. Practically throughout the author uses Langley's term—autonomic—for the sympathetic nervous system. Cardiac physiology is very thoroughly done and we are glad to see incorporated the excellent work of Dr. J. Mackenzie on pulsatile phenomena. In an appendix some of the physical processes which play such an important part in the explanation of physiological phenomena are tersely described.

The work throughout is sound, accurate, philosophical, and thoroughly up to date, and should be read by students preparing for the higher examinations, while practitioners of medicine will find in it an admirable survey of the present state of physiology and its practical bearing on medicine.

Die Geschichte der Ohrenheilkunde. (The History of Otology.) By Professor ADAM POLITZER of Vienna. In Two Parts. Part I.: From its Earliest Commencement to the Middle of the Nineteenth Century; with 31 full page portraits and 19 figures in the text. Stuttgart: Ferdinand Enke. 1907. Pp. 467. Price 20 Marks.

Professor Politzer's researches take us back to the days of the Egyptians, dating from the time of Notiz Heredox, and we gather from the book before us that there was a considerable amount of knowledge of diseases of the ear amongst the practitioners of medicine in those days. From Egypt he passes on to Babylonia and Assyria and Judea and we see that in the Talmud one of the four celebrated physicians, Manjume, who lived 280 A.D., describes running from the ear as dangerous, with certain exceptions. Naturally there is a considerable amount of information with regard to the earlier treatment of diseases of the ear derived from India. Professor Politzer next proceeds to the Græco-Roman period, dating from the time of Hippocrates, 460 B.C., all his quotations being supplied with references. Aristotle next comes under review and then the period from Aristotle to Galen, including the works of Celsus and others less well known. The Byzantine period, commencing about 525 A.D., is next considered, and during this period Alexander of Tralles appears to have had a great reputation, as had Paul of Aegina and others. The author then enters very fully into otology as known and practised amongst the Arabians in those times, and goes on to what is termed "Die Latinobarbaren" period, in which comes a large number of names, mostly Italian, but all of men who appear to have contributed their mite to the history of otology. After this we are brought to the period of the Renaissance where we find names better known to us all, such as that of Andreas Vesalius, and Professor Politzer reproduces a copy of the earliest picture of the malleus and incus, with a section through the organ of hearing reproduced from Vesalius's work, "De Corporis Humani Fabrica Libri Septem," 1543. Amongst other names in this period we may mention those of Fallopius, Bartholomeo, Eustachio, who was born in 1510 and whose careful dissections of the ear added so much new matter, and Giulio Casserio whose name is so well known in connexion with anatomy. The last shows in his work, published in 1600, the comparative anatomy of the ossicles, while Felix Plater shortly afterwards gave a diagrammatic representation of the auditory organs, vessels, membranes, ossicles, and so on. In chronological order Professor Politzer proceeds to describe the progress of the science and art of otology in the various countries in the same way in which h described the sixteenth century, to which we have just alluded, grouping the shining lights in their various nationalities. We find the names of Englishmen appearing foremost, among them that of Thomas Willis. Under Otology of Modern Times we find only J. B. Winslow and Elliott representing Britain, Dutch and British being grouped together. It is interesting to learn that it was in the closing decades of the eighteenth century that the first definite indications for the operation of opening the mastoid were given, although it had been already employed for over a hundred years.

It is impossible even to allude, however briefly, to all the interesting information stored up in this first volume of Professor Politzer's exhaustive work, but it is one which will be a fitting memorial of a useful life. It is a work which will find its place in every library and we look forward with pleasure to seeing its completion.

A Study of the Human Blood-vessels in Health and Disease: A Supplement to "The Origin of Disease." By ARTHUR V. MEIGS, M.D., Physician to the Pennsylvania Hospital. With 103 original illustrations. London and Philadelphia: J. B. Lippincott Company. 1907. Pp. 136. Price 21*s.* net.

A COMPREHENSIVE study of the histological features of the human blood-vessels, both in health and in disease, should afford a great amount of valuable information. Dr. Meigs, who has been attached to a hospital where he has either personally conducted the necropsies on his own cases or has directed their performance, has also himself investigated by microscopical methods the materials obtained. He has therefore enjoyed special opportunities for the investigation of the state of the blood-vessels in various abnormal conditions. Some years ago he collected his observations and his deductions therefrom in his book entitled "The Origin of Disease." When all the unsold copies of this book were destroyed by fire in 1899, instead of preparing a new edition he determined to elaborate his work on the blood-vessels, incorporating the results of later observations, and to publish it in the form of a new work to be in some sense a supplement to his former one.

In the introduction he claims that the human blood-vessels have not been exhaustively studied either in respect of their anatomy or of their diseases and that the descriptions in text-books are too frequently drawn from the appearances presented by the blood-vessels in the lower animals. He also states that too little attention is paid to the changes occurring in the vessels as age advances, with the result that there is no standard to establish whether a vessel is of normal appearance at a given age. The first chapter deals with the normal histology of arteries and veins. In order to avoid the shrinking which occurs during the processes involved in the preparation of sections for the microscope Dr. Meigs inserts a rod of glass or other rigid material within the lumen of the piece of vessel which is being prepared and of such a size as to keep it distended without stretching. Sections from the same vessel prepared without this precaution were also examined for purposes of comparison. He finds that the intima is of very variable thickness at different parts of its circumference and that the fine layer of endothelium lining the arteries and veins is exceptional, which is a very heterodox statement in support of which he gives little direct evidence. The sections prepared from vessels which have had a rod inserted into them show that the fibres of the muscular coats of arteries are arranged in regular concentric fashion and not irregularly as they often appear to be in ordinary sections. Another point which is referred to is that arterioles of good size and composed of three coats may be accompanied by return vessels with a single coat which are more like large capillaries than ordinary veins.

The capillaries form the subject of the second chapter, in which the extraordinary opinion is propounded that they are "ephemeral and elusive," that they are nothing but tubes hollowed out in the connective tissue with which they are surrounded, and that if a capillary becomes emptied, and remains so it forms "a string or fibre of connective tissue." In support of this statement the structure of the spleen is referred to, but Dr. Meigs's

contentions do not carry conviction, since he does not appear to have employed the silver nitrate method of demonstrating the capillary endothelium. The third chapter deals with the formation of new blood-vessels and it is suggested that new vessels may arise, not only by outgrowths from pre-existing vessels but also independently in a manner similar to that by which they originate in the embryo. Dr. Meigs suggests that the so-called giant cells found in tubercles are abortive attempts to produce new blood-vessels and gives some drawings to illustrate his contention, which are, however, far from convincing.

In the fourth chapter some observations are made upon disease of the blood-vessels in general. A morbid degree of thickening of the muscular coats of arteries is stated to be very common and is regarded as a degenerative rather than as a compensatory change. A similar explanation is offered for the hypertrophy of the heart which occurs in disease, which is not regarded by the author as necessarily compensatory and beneficial. In regard to the intima of blood-vessels, it is affirmed that a progressive thickening occurs as age advances, and that this may be of such a degree as to make the intima thicker than the other two coats together. The cause of cerebral hæmorrhage is attributed to a chronic ulcerative process affecting the vessel walls and not to rupture from increased pressure on the weakened walls.

Diseases of veins are next considered and various conditions of fibrosis and of endophlebitis are described. Disease of the radial arteries and veins is discussed and receives special attention owing to the fact that they are most frequently studied during life. Dr. Meigs finds that one vessel may be normal and the other diseased, and that the appearances presented in sections from closely adjacent parts of the same vessel may have widely different characters. He also states that the radial veins are very frequently diseased. The blood-vessels in inflammation, in tuberculosis, and in syphilis are next the subject of examination, and the general conclusions reached are that these conditions all produce lesions which are in no way specific and that syphilis does not cause disease of the blood-vessels so frequently as some authorities believe. In regard to the blood-vessels of the heart, the statement is made that the capillaries actually penetrate the muscular fibres. The venous radicles accompanying small arterioles are said to have the structure of large capillaries. The blood-vessels of the lungs are described and the occurrence of fibrosis in them is figured and described. Chapters are also devoted to the blood-vessels in the liver, spleen, kidneys, brain, and spinal cord.

The book is illustrated by 103 figures which have been prepared by the camera lucida and etched directly upon the metal plates from which they were printed. They constitute the most admirable feature of the book, as they are of singular excellence. We must confess to being disappointed with the letterpress, since Dr. Meigs so often expresses views divergent from those at present current on grounds which are anything but convincing. It is, however, only fair to state that in the concluding paragraph of his book he practically admits this. It is impossible not to admire the energy and persistence which the preparation of this volume must have entailed.

Green's Encyclopædia and Dictionary of Medicine and Surgery. Vol. VII. Neriïn—Physiology (Tissues). London and Edinburgh: William Green and Sons. 1908. Pp. 579. Price 15*s.*

IN the reviews which have appeared in the columns of THE LANCET on the previous volumes of this work we have explained its nature and scope. As will be seen from the title, the volume now before us carries the subject matter from Neriïn to Physiology, and we are informed in the preface that it contains 1322 subject headings. Besides containing important monographs on Nerves, Nose, Paralysis, Peritoneum, and so on (which have appeared in the "Encyclopædia Medica"), it contains an article on Pharmacology and the first half of a long paper on Physiology. Numerous short contributions have likewise been added dealing with subjects of interest, such as the Ophthalmo-reaction and Opsonins. Contributions on certain subjects, in the knowledge of which there has been marked progress during recent years, have been revised—e.g., the article on Diseases of the Pancreas; and new paragraphs have been added (under "Parasites") dealing with trypanosomes, with the spirochæta pallida, with piroplasma, and with cytorycetes.

The article on Pharmacology has been written by Dr. J. Stewart Fowler of Edinburgh. In considering the pharmacological action and chemical constitution of drugs he makes some interesting observations on the theory of ions. He points out that the view is now held that not the molecule of a salt in a solution as a whole but the ions into which it is dissociated produce its effect. Certain salts, acids, and bases when dissolved in water form electrolytes and are split up into positive ions and negative ions. The ions in solution exert the same osmotic pressure as molecules, and when they are comparatively inactive in other respects pharmacological results depending solely on osmosis may occur. When the action of the ions is potent, however, the effects of osmosis may be neglected. For instance, Dr. Fowler mentions that the hydroxides of the alkalies act as corrosives by reason of the OH ion, the K or Na ion being inert, but alcohol is not corrosive because the OH is not dissociable into an ion. Again, cacodylic acid is not poisonous because it is not dissociable, and therefore none of the effects of the As ion are produced. These facts constitute an interesting basis upon which to form an explanation of the action of certain drugs in the treatment of disease.

The article on Physiology is written by Dr. D. Noel Paton of Glasgow. Part I. deals with the Tissues and the Neuromuscular Mechanism. Part II. (Nutrition of the Tissues) will appear in Vol. VIII. Judging from the portion now before us, an instructive and useful *résumé* of the knowledge which now exists with regard to physiology will be the result. The article will be of value mainly for reference, as it does not pretend to take the place of any of the ordinary text-books on the subject.

LIBRARY TABLE.

Essentials of Surgery: An Outline of Surgical Pathology, Diagnosis, and Treatment, for Students and Practitioners. By ALWYNE T. COMPTON, F.R.C.S. Eng. Illustrated. London: Henry Kimpton. 1908. Pp. 428. Price 4*s.* net.—There are many books claiming to contain a *résumé* of surgery and they vary greatly in value; but of all those which have come under our notice we have not seen one which more nearly approaches the ideal than this. It is confessedly only an outline and it is not intended to replace the ordinary text-book, but it is likely to prove useful to students and practitioners who wish to revise their knowledge and to have in a compact form the main facts and principles of surgery. Descriptions of major operations have been omitted, but we think that in a second edition it might be well to give the main points of these operations. The printing is good and the employment of heavy-faced type for important words and for headings facilitates reference.

Labyrintheiterung und Gehör. (*Suppuration of the Labyrinth and Hearing.*) By Dr. HEINRICH HERZOG. With eight tables and 28 photographs. Munich: J. F. Lehmann. 1907. Pp. 133. Price 5 Marks.—This brochure is

founded on macro- and micro-scopic examinations of seven cases of tuberculous disease of the middle-ear, complicated by suppuration of the labyrinth. Careful tests of the hearing were made in each case, and after death a thorough histological examination was carried out. Photographs of sections showing the more important pathological changes are reproduced, with an explanation of each. Dr. Herzog thus summarises his observations. Destruction of audition in inflammatory disease of the labyrinth commences at the lower tones and proceeds upwards. In making a diagnosis of progressive labyrinthitis it is essential to ascertain the lower sound limit. For an approximate diagnosis testing of the median tones of the scale by air conduction is sufficient. Loss of perception of these tones shows commencing labyrinthitis. Every labyrinthine suppuration leads to complete deafness. Abolition of cochlear function precedes loss of vestibular function. The primary result of infection of the labyrinth is diffuse labyrinthitis serosa or sero-fibrinosa. Isolated sections of the labyrinth may be comparatively unaffected. Ectasis and collapse of the membranous labyrinth result from slowly developing labyrinthitis. Perforation of the bony capsule is not essential for infection. This is of common occurrence in tuberculosis. The demonstration of hearing excludes labyrinthitis, as there is never preservation of hearing with labyrinthine suppuration. These conclusions of Dr. Herzog, while most interesting in themselves, as derived from careful examination of these tuberculous cases, will not be found quite accurate when applied to suppurative disease other than tuberculosis, as the disease of the labyrinth, according to many authorities, may be confined entirely to that portion supplied by the vestibular nerve. Still we think that this brochure will be welcomed by advanced students of otology.

Report on Plague in Queensland, 1900–1907. By B. BURNETT HAM, M.D. Brux., Commissioner of Public Health. Brisbane: The Government Printer. 1907. Pp. 166.—This valuable work, which is illustrated by numerous folding maps, plans, charts, diagrams, sketches, and reproductions of photographs, is a report to the Queensland Government and has been submitted to both Houses of the Queensland Parliament. It narrates the accumulated experience of eight successive years and is divided into four parts, describing respectively (1) the origin and progress of the various epidemics; (2) the incidence of the disease according to sex, age, race, occupation, season, and so on; (3) the clinical features and forms of the disease; and (4) its epidemiology. Plague broke out at Sydney in New South Wales on Jan. 19th, 1900, and in about three months was imported into Queensland through the agency of rats carried on vessels arriving in Queensland ports from Sydney. Great alarm and excitement were immediately aroused among the populace and the Legislature passed the Health Act of 1900 by which a Commissioner of Public Health (Dr. Ham) armed with extensive executive powers was appointed and various changes were made in the general sanitary administration. During each of the eight years from 1900 to 1907 (June 30th) there was an epidemic separated by distinct intervals from the preceding and following ones. The towns invaded were 11 in number and there were altogether 464 cases with 195 deaths. Of these Brisbane, the capital of the State, with a population of about 120,000, had 300 cases, with 118 deaths. Under the heading of Incidence of Plague it is stated that the liability of medical attendants and nurses to be attacked appeared to have a direct relationship to the infectivity of each of the different clinical types of the disease. There was no clear instance of infection having been contracted from an ordinary bubonic case, but at Maryborough, 167 miles by rail from Brisbane, the admission of several unrecognised cases of pneumonic plague into the local hospital resulted in three nurses being attacked, two of whom died. The measures taken for the suppression of the outbreak at Maryborough included the preventive inoculation of the medical staff and the nurses with Yersin's serum, and the wearing of specially designed costumes and respirators; seven persons thus accoutred are shown in a full-page plate. Under the headings of Clinical Features and Types of Plague, Bacteriology, Diagnosis, and Treatment, an immense amount of information is supplied to which we can only make a passing reference. From the beginning of 1901 to 1907 patients were treated with Yersin-Roux serum obtained from the Pasteur Institute in Paris and from the Lister Institute of Preventive Medicine in London. The case mortality per cent. of the various classes of patients was as follows: total cases, 39·3; cases treated with serum, 29·7; and cases treated without serum, 73·9. Under the head of protection Dr. Ham says: "Of all the measures taken to control or prevent the spread of plague the destruction of rats is the most essential, and, in many respects, the most difficult matter." He elsewhere states that the substances used for the disinfection of houses must be parasiticides, in view of the fact that the rat-flea is a means by which plague is conveyed from rat to rat and from rat to man. For the fumigation of shipping the Clayton disinfecting machine appeared to him to have decided advantages over other methods. The section on the Epidemiology of Plague occupies 48 closely printed large pages and is mainly a comprehensive discussion on the subject of rats and their parasites, illustrated by pictures of several kinds of rats and rat-fleas. The entomological part reflects to a considerable extent the work of Mr. H. Tryon, entomologist to the Queensland Government. Dr. Ham is a supporter of the rat-flea hypothesis of plague convection and points out that it sheds light on several obscure points, such as the geographical and seasonable distribution and the latency and the recrudescence of the disease.

Hernia: Its Cause and Treatment. By R. W. MURRAY, F.R.C.S. Eng., surgeon to the David Lewis Northern Hospital, Liverpool; late surgeon to the Liverpool Infirmary for Children. London: J. and A. Churchill. 1908. Pp. 99. Price 4*s.* 6*d.*—Mr. Murray is the chief exponent in this country of the theory of the etiology of hernia put forward by Mr. R. Hamilton Russell of Melbourne. This theory is that all herniæ occur in preformed sacs, congenital in origin. One important argument in favour of this is the fact, as shown by Mr. Murray, that in 200 consecutive necropsies he found that in 47 of the bodies there was a pouch, inguinal or femoral, and in some cases both. Yet in these cases no hernia existed. It is held, then, that the sac is essential to the production of a hernia, and the natural deduction is that removal of the sac, if the removal is complete, will prevent any recurrence. There is a good deal to be said for the theory, and this book contains a good account of it and the methods which Mr. Murray employs in treating hernia. It is worth reading by those interested in this department of surgery.

Skin Diseases, their Nursing and General Management. By G. NORMAN MEACHEN, M.D., B.S. Lond., M.R.C.P. Lond. & Edin., M.R.C.S. Eng., Physician for Skin Diseases, Tottenham Hospital; Lecturer in Dermatology, North-East London Post-Graduate College; Assistant in the Skin Department, West London Hospital, &c. London: The Scientific Press. 1907. Pp. 134. Price 2*s.* 6*d.* net.—This little book is intended to assist nurses in the nursing of skin cases. It is always difficult to determine exactly how much medical instruction is needed by a nurse and we are inclined to think that perhaps a little more dermatological knowledge

is given here than is required. Nurses who have to tend patients suffering from skin diseases will profit by reading the book.

JOURNALS AND MAGAZINES.

The Hospital Gazettes.—The issues of *Guy's Hospital Gazette* of July 11th and 25th contain a prize essay of the Physical Society on the Diagnosis of Acute Abdominal Conditions, by Dr. R. G. Chase. In the latter number "M. E. B." contributes a sympathetic account of Mr. C. H. Golding-Bird's last round of his wards after 40 years' connexion with Guy's Hospital. The ceremony included the presentation of a silver salver from old house surgeons and dressers. The issue of August 8th is in mourning for the late Sir Thomas Stevenson, and includes some personal reminiscences of the great toxicologist by Mr. R. Bodmer.—The *London Hospital Gazette* for July contains in its clinical supplement a useful paper on Midwifery in Private Practice, by Dr. R. Drummond Maxwell. Dr. F. J. Smith, in a short paper on the Future of Medical Education, asks, "Is it possible to imagine a man versed in vaccines, opsonic indices, antitoxins, taking a club practice at 3½*d.* a visit with medicine thrown in for nothing?" and at least hints that the problem may be solved by a system of differential education.—The *Middlesex Hospital Journal* for July records a change of editors, Mr. N. Bishop Harman passing on his pen to Dr. C. E. Lakin, who continues his "Story of Our Museum" in this issue.—*St. Bartholomew's Hospital Journal* for July contains a plate illustrating many challenge trophies won by the Smithfield school at the recent U.H.A.A. meeting.—The chief contribution to *St. George's Hospital Gazette* for July is a paper on Immunity, by Dr. C. Slater. The School Notes record a recent complimentary dinner given to Dr. William Ewart by his colleagues.—*St. Mary's Hospital Gazette* for July contains Dr. W. B. Cheadle's second Emeritus lecture. Under the title of "Obiter Dicta" he presents much shrewd and practical advice, especially regarding the abuse of tonics and purgatives.—The July number of *St. Thomas's Hospital Gazette* contains an important address upon Some Imperial Aspects of the Study of Tropical Medicine, by Sir Charles Bruce, G.C.M.G., in which he pays a tribute to the recognition which has been accorded to the imperial aspects of tropical disease research by the Colonial Office, the War Office, and the Admiralty, following on the initiative of Mr. Joseph Chamberlain.

The Liverpool Medico-Chirurgical Journal.—A very interesting group of articles appears in the July issue of this journal. It deals with disorders of the colon, the individual papers being one on Pericolitis Sinistra, by Dr. J. Lloyd Roberts; one on Chronic Colitis, by Dr. G. R. Mill (a personal record); and one by Dr. A. C. Ransome on the Treatment of Mucous Colitis. With these may be taken a paper on the Etiology of Appendicitis, by Dr. Owen T. Williams, in which he assigns the causation of this disease to an abnormal condition associated with the formation of calcium soaps. This last paper, again, should be read in conjunction with a very suggestive article by Dr. W. Blair Bell on the Importance of Calcium Salts in Metabolism. Among much else that is of value we may mention a paper by Dr. F. G. Bushnell on the Relationship between Certain Blood Diseases and Sarcoma, and two which deal with Exophthalmic Goitre written respectively by Dr. W. B. Warrington and Mr. C. Thurstan Holland.

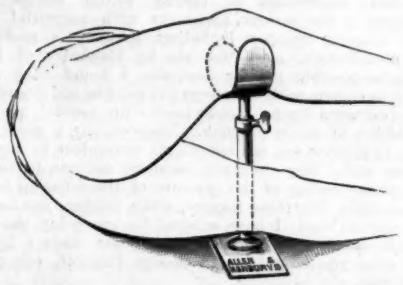
West London Medical Journal.—In the July number is published the Cavendish lecture delivered by Sir W. Whitla on the Etiology of Pulmonary Tuberculosis, which has already appeared in our columns. Dr. Herbert R. Spencer writes on the advisability of examining the abdomen and pelvis in the early period of pregnancy, by which means many serious conditions may be recognised and treated in time, and Dr. Seymour Taylor contributes an interesting paper on Some Neglected Remedies, among which he places setons, blood-letting, and blistering, as well as such drugs as sarsaparilla, assafœtida, and galbanum, and preparations such as Plummer's pill and pulvis basilicus.

La France Médicale.—The issue for July 10th of this entertaining weekly, which is chiefly devoted to medical archæology, contains an article entitled "L'Arsenal Instrumental Urinaire sous Ambroise Paré," illustrated by four plates taken from the fifth edition of Paré's chirurgical works. The number and variety of the instruments used in the sixteenth century in cutting for stone will surprise many who see these instructive pictures; some of the instruments are not so very distantly removed from some in use at the present day, but included are some terrible weapons, such as a monster ancestor of the lithotrite which was not, however, passed per urethram, but introduced through the perineal wound. After seeing the likeness of this formidable armamentarium it is easier to understand the diffidence of Paré's immortal phrase, "Je le pansay et Dieu le guarit."

New Inventions.

A NEW OBSTETRIC CRUTCH.

IN obstetric operations, and especially when applying forceps with the patient lying on the left side, I have often felt hampered by the right thigh and leg being in the way of my hands, and the nurse, to whom I usually give the job of holding up the right leg, soon begins to find the weight tiresome. To obviate all this I have designed an obstetric crutch which has been made for me by Messrs. Allen and Hanburys. (See illustration.) The crutch is made of aluminium



and is light, strong, and cleanly. By means of a screw the upper portion may be raised or lowered to any convenient height. I have had one in use in my practice for several months (it goes comfortably into my midwifery bag), and both patients and nurses have expressed themselves much pleased with it. With the instrument in place the least touch on the heel is sufficient to balance the leg, and occasionally I have managed without any such help. Even in normal labours I have found the value of this crutch when the head is passing through the vulva.

Chadwell Heath. T. REUELL ATKINSON.

"SPOON-DROPPER" FOR THE EAR AND OTHER CAVITIES.

THE popular plan of introducing liquids into the ear by means of a teaspoon has so much to recommend it that it has become the favourite method not only with the laity but also with medical men. The teaspoon permits us to see where the liquid is going and it is easily sterilised by boiling, a process which by heating the spoon also warms the liquid put into it afterwards. The drawback to the teaspoon is that in the absence of a nozzle or spout the stream or drops of liquid cannot be efficiently controlled and accurately directed.

This defect I hope I have eliminated in the instrument figured in the accompanying illustration. The spoon-dropper is preferable to a glass pipette in the ease with which it can be sterilised and warmed, in the absence of any risk of sudden breakage (an accident likely to happen when the

patient is an unruly and restless child), and in the rapidity with which glycerine and other thick liquids flow from it.

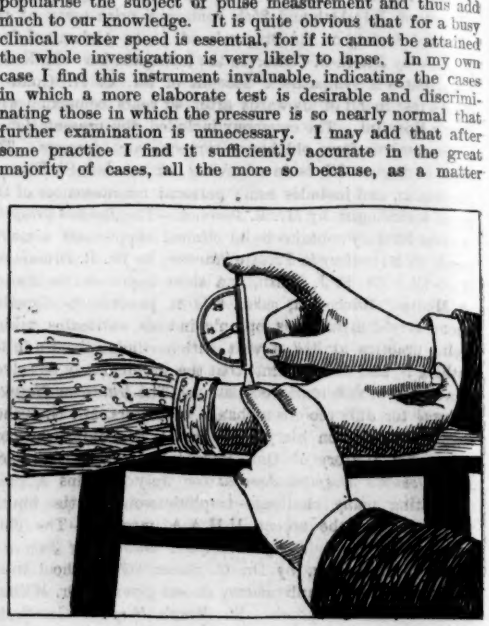
The spoon-dropper can be obtained from Messrs. Mayer and Meltzer at an extremely moderate price.

DAN MCKENZIE, M.D. Glasg.,
Assistant Surgeon, Central London Throat and Ear Hospital.

A SIMPLE SPHYGMOMETER.

IN the year 1890, while following the clinique of Professor Henri Bernheim at the Hôpital Civil at Nancy and learning the use and value of hypnotism and suggestion in medical practice, I observed him using an instrument for testing pulse pressure. It was similar to the one known in France as Dr. Block's sphygmomètre and seemed to work satisfactorily. It has, however, two faults—namely, that it was difficult to read the index and that it was too long to fit easily in the pocket. A few years later, during a very profitable visit to Harrogate, I learned a great deal more about pulse pressure measurement from my friend Dr. George Oliver, one of the earliest and ablest investigators in this special field of observation. Since then I have worked more or less at the subject and learned how important it is in reference to diagnosis and treatment. At first I used Dr. Oliver's spring pulse gauge and found it excellent despite two disadvantages—namely, that it was a little large to carry in the pocket and the index a little complicated to read owing to the numeration in circles within circles. Later I began to use various apparatus with mercurial column and inflating bracelet, including Mummery's modification of Riva-Rocci's, made for me by Hawksley of London. Despite possible greater accuracy I found that all the sphygmometers with the mercurial column and bracelet have disadvantages by no means trivial for general use by any physician in active practice. They occupy a good deal of time in application, are not at all convenient to carry, and, worse still, they frighten sensitive nervous patients and sometimes, owing to the pressure of the inflating bracelet, cause pain. For these reasons, while holding one in reserve in case of need, I have adopted for every-day use a very simple spring sphygmometer which was made a few years ago after my design by Mr. George Prescott, our optician in Dublin.

Now these instruments are made by Collin of Paris (Maison Charrière, Rue de l'École de Médecine). Great pains have been taken to make the index follow closely the equivalent of grammes representing centimetres of a mercurial column. They are admirably turned out and accurate in the degree later explained. The accompanying illustration shows the instrument and the mode of using it. Having put the patient's arm resting on a table, or on a pillow if the subject is in bed, I place the first and second fingers of my left hand on the radial artery, leaving a short space between them. Next I place the foot of the sphygmometer on the nail of the finger *nearest* to the heart, and then press the stem, which acts on the spring in the gauge, with the forefinger of the right hand until I cease to feel the pulse beat with the finger of the left hand *furthest* from the heart. At this moment the figure indicated by the needle marks in centimetres (of mercury) the pressure needed to obliterate the pulse. Multiplying this by ten I find the pressure in millimetres (of mercury) just as in Riva-Rocci's apparatus. If preferred the instrument may be placed directly on the artery itself, in which case it should have a soft terminal cushion of indiarubber, but being accustomed to the method described I prefer it. If the method described above is used the observer must be careful to utilise the finger upon which the sphygmometer is placed only as a *cushion* and not to make the least pressure with it. I do not suggest that this spring sphygmometer gives all the information possible and with the most perfect accuracy but I am satisfied from experience that it is most useful for *preliminary* examinations, and as it occupies only half a minute in use and fits in the vest pocket I believe that if largely used it will popularise the subject of pulse measurement and thus add much to our knowledge. It is quite obvious that for a busy clinical worker speed is essential, for if it cannot be attained the whole investigation is very likely to lapse. In my own case I find this instrument invaluable, indicating the cases in which a more elaborate test is desirable and discriminating those in which the pressure is so nearly normal that further examination is unnecessary. I may add that after some practice I find it sufficiently accurate in the great majority of cases, all the more so because, as a matter



of fact, all sphygmometers, mercurial or other, are really only approximately reliable, so much depending on the condition of the patient as to stoutness or the reverse and the construction and condition of the instrument used. It is needless to add that where india-rubber tubes enter into the construction of any instrument some latitude must be accorded to the indications. I do not on the present occasion allude to the history of this subject of pulse gauging, which may be found in the text-books. All I desire is to urge the necessity of simplifying the process by the introduction of some such instrument as the one I describe.

For the benefit of those who wish to investigate this subject I may mention a few reliable works easily obtainable—namely, "La Pression Artérielle," par le Professeur C. Potain, Paris, 1902; "The Clinical Study of Blood Pressure," by Theodore Janeway, New York, 1904; "Studies in Blood Pressure," by Dr. George Oliver, London, 1906; and a very comprehensive and satisfactory lecture on that subject by Dr. H. D. Rolleston published in the *Clinical Journal* of June 21st, 1905. Needless to add, there are many more most valuable contributions in the medical journals since the dates mentioned.

FRANCIS R. CRUISE, M.D. Dub.
Dublin.

ROYAL CORNWALL INFIRMARY, TRURO: A NEW WING.—The annual meeting of the subscribers to this institution was held on August 12th. The annual report stated that during the past 12 months 457 in-patients had been admitted, against 428 in the corresponding period of the previous year. The financial statement showed a favourable balance of £20. The report of the Perranporth convalescent home (which was founded and endowed by Mr. Passmore Edwards and is in connexion with the infirmary) showed that during the past 12 months 85 patients had been admitted, the average stay of each being 27 days. The committee acknowledges the gift of the x ray apparatus from Mr. G. Petherick and adds that the new wing of the infirmary, which is being erected for the better accommodation of the resident staff, is now nearly completed.

THE BRITISH MEDICAL ASSOCIATION.

SEVENTY-SIXTH ANNUAL MEETING AT SHEFFIELD.

THE SECTIONS.

SURGERY.

FRIDAY, JULY 31ST.

BEFORE the meeting this morning a number of interesting surgical cases were shown by the PRESIDENT of the section, Dr. SINCLAIR WHITE (Sheffield), and others. The cases included spasmodic torticollis, a branchial fistula, osteitis deformans, a manus vara, and a carcinoma of the tongue which had developed on a gummatous ulcer.

Dr. ANTOINE DEPAGE (Brussels) read a paper on

Painful Displacement of the Ribs.

He apologised for the slightness of his subject, as he had intended to read a rather important paper on Cancer of the Breast, which unexpected circumstances had not allowed him to complete, and he did not like to leave England without a contribution to surgery. He proceeded: "It happens frequently that women complain of indefinite pains on the right side; it is rare for these pains to occur on the left side. The pathology of these cases is obscure; naturally the kidney is first examined, and as 70 per cent. of women out-patients have a moveable kidney (such at least has been my experience) the symptoms are liable to be attributed to nephroptosis. If nephropexy is performed no improvement in the pain is noticed, and this is because the pain has another cause. It must be borne in mind that a moveable kidney is only painful in about 10 or 15 per cent. of the cases. Sometimes the pain is attributed to appendicitis or to ovariosalpingitis, but removal of the appendix or of the ovary gives no relief. Sometimes the pain is due to muscular rheumatism or to hysteria, but more often it depends on biliary calculi, and many times I have cured patients who had been sent to me for moveable kidney by performing a cholecystotomy. There is, however, a special pathological condition which has received no recognition, and that is 'displacement of ribs.' As a result of the great inclination of the lower ribs it happens sometimes that the eleventh or even the tenth rib presses on the iliac crest, or one rib may override the other, giving rise to pain in the iliac region. The pain is dull and is chiefly noticeable when the patient moves or walks. Palpation is not painful. There is no space left between the border of the ribs and the iliac crest, but pressure on the crest or on the tenth and eleventh ribs is painful. The kidney is often easily felt, but pressure on it causes no pain." Dr. Depage went on to say that during the last four years he had seen 30 cases. As to the exact cause of the pain he could give no explanation, but he suggested that it was due to compression of nerves, or to periostitis or perichondritis. The best early treatment was to be found in carefully selected gymnastics, but a year's treatment was required for a cure. Corsets were forbidden. In four cases in which the suffering was intolerable he had performed resection of the anterior extremity of the ribs. In all cases recovery was complete, though in one the pleura was perforated.

Mr. ANDREW FULLERTON read a paper on

Some Cases of Hæmaturia.

He wished to show the great value of the urethroscope and cystoscope in the diagnosis of the cause of hæmaturia, and also to demonstrate that in the hands of a general surgeon the instruments could give much information. In one case a patient had been bleeding for six days before he was seen and he was much blanched. By the aid of the urethroscope several small papillomata could be seen near a stricture about two and a half inches from the meatus. These papillomata were stripped off by being caught between the edge of the urethroscope and a sharp curette. The bleeding ceased at once and did not recur. In one patient the symptoms were those of cystitis and obstruction to the flow of urine, and he was thought to have stone, but the cystoscope showed that there was a papilloma, of about the size of a marble, attached by a long pedicle to the anterior wall of the bladder. There was a pint of residual urine. The papilloma was removed by a suprapubic incision with a perfect result. In another patient the only symptom was hæmorrhage. On cystoscopic examination a well-marked carcinomatous ulcer was seen at the base of the bladder. Mr. Fullerton had examined with the cystoscope a man who had been caught between two buffers; he had had severe hæmorrhage from the urethra and by means of the cystoscope a long rent was seen in the left wall of the bladder; the peritoneum was still intact. In one case of hæmaturia the cystoscope showed the blood to be coming from the left ureter. The kidney was laid open and a minute sharp spicule of oxalate of lime was removed from the left kidney and complete relief of the hæmaturia occurred. Mr. Fullerton related the histories of many other similar cases in which the cystoscope had proved of very definite value in the diagnosis or in the treatment.

Dr. LUCAS-CHAMPIONNIÈRE (Paris) read a paper on

The Treatment of Fractures by Mobilisation and Massage,

in the course of which he said: "From the beginning of surgery the management of fractures has been based on two principles—(1) the reduction of the fracture should restore to the bone the exact form which it had before the fracture, and (2) the most rigorous fixation of the fragments is the best condition for bony union. In opposition to the second of these principles absolute fixation of the fragments is not the most favourable condition for bony union. A certain amount of movement is necessary. This movement favours the vitality of the bone and of all the structures of the limb injured by the fracture; it also plays an important part in the preservation or restoration of muscular power, in the integrity of the circulation, and in the flexibility of the tendons, ligaments, and joints. An experience of 40 years in this method of treatment justifies me in saying that the sooner mobilisation and massage are employed after the fracture the greater will be the rapidity and completeness of the repair. It is usually impossible and unnecessary to restore the bone to its original form. In the case of certain fractures even the impaction of the fragments should be respected to a certain extent. One object of movement and massage is to relieve the pain, and as it relieves muscular irritability and spasm in this way also it favours the disappearance of deformities. Some deformities persist and increase with violent efforts at reduction but disappear spontaneously with a regular course of movement and massage. This is especially seen in fractures of the elbow, olecranon, and clavicle. This method of treatment requires watchfulness and constant action. The surgeon participates directly and continually in the repair. Simple mobilisation should consist of slight and gradually increasing movements of the joints most remote from the seat of fracture and then of the nearer joints. At first they should be passive movements, but as soon as the cessation of pain allows active movements are called for, but they should always be limited in range. The degree of the movement should only be increased when union has taken place, and then it will be performed without effort. The best preparation for movement is afforded by massage, but the massage must be gentle; it must never be painful, and it should commence at a distance from the seat of fracture and should always be done in the same direction—that is, in the course of the venous blood. Daily massage is the most satisfactory; it is harmful to do it more than once a day. The treatment should extend to the whole of the limb; thus if the shoulder is fractured the patient must not neglect movements of the hand. The greatest difficulty in the application of this method is in the choice and type of the apparatus to employ. It should exert as little constriction as possible, and it should support the limb in a non-painful position. Callus forms rapidly and in a few days there is sufficient consolidation to maintain the position. Although this method of treatment is applicable to all fractures, yet the value of it is more marked in some fractures than in others; it is especially useful in fractures in the neighbourhood of joints. All fractures of the neck of the femur should be treated by movement without reduction rather than by massage, and the patient should even make attempts at walking after nine or ten days. It is sometimes difficult to determine what fractures in the neighbourhood of the ankle should be treated by this method. In the case of some malleolar fractures it

is necessary to immobilise rigorously, and some may even need suture, but with increasing experience the number of such cases will diminish. The benefits of the new treatment are certain: in the first place the cure is more rapid; secondly, it is definite, for no stiffness follows the treatment; and thirdly, it is painless. As the pain disappears so early there is a risk that the patient may wish to use his leg or his arm before consolidation has taken place, but this must not be allowed."

Professor R. J. PYE-SMITH (Sheffield) agreed that by the employment of early movement and massage the results were much better than formerly.

Professor J. CHIENE (Edinburgh) said that in 1886 he had satisfied himself that the method was right. A good proof that movement was not opposed to firm union was to be found in the case of the ribs; it was not possible to prevent a fractured rib moving, yet they never heard of non-union. Movement was of great importance, but active movement was of special importance. He would rather have an ounce of active movement than a pound of passive movement. On the day following the fracture the patient was encouraged to move the limb, but the movement must stop short of pain. The hand of an attendant should steady the limb. Any apparatus employed must be simple and it must cause no constriction; a many-tailed bandage was the best form of bandage to employ. It must be borne in mind that "massage" had three objects: first, the breaking down of adhesions; secondly, the getting rid of effusions; and thirdly, the relief of pain, and this third object was that which was aimed at in the treatment of fractures. To his students he was in the habit of saying, "Movement is life, stagnation is death."

Mr. LYNN THOMAS had employed the method for the last 16 years. He himself had ruptured his tendo Achillis a few years ago and within ten weeks he was able to walk, massage and movement having been employed in the treatment.

Dr. J. E. BOWSER (Penrith) expressed his pleasure at finding that one of the subjects discussed was of interest to general practitioners. The treatment of fractures was of great importance to them.

Professor I. H. CAMERON (Toronto) said that he had treated Colles's fracture by movement for the last 30 years with excellent results. Fracture of the neck of the femur he treated in the abducted position.

In reply, Dr. LUCAS-CHAMPIONNIÈRE maintained that passive movement should precede active movement.

Mr. ROBERT KENNEDY (Glasgow) read a paper on

Section of the Posterior Primary Divisions of the Cervical Nerves in Spasmodic Torticollis.

At the present day the method of treating cases of severe spasmodic torticollis consisted in destroying the nerve supply of the affected groups of muscles. In severe cases division of the spinal accessory nerve only was not sufficient, but the nerve supply of the muscles at the back of the neck on the opposite side must as a rule be destroyed also. The published methods of exposing these cervical nerves rendered the procedure somewhat difficult. A much better exposure was got by cutting down along the external border of the complexus, dividing the splenius capitis, and turning the complexus inwards after having detached the upper two slips of origin of that muscle. The nerves were then easily reached. The objection to the operation was the muscular and sensory defects which resulted and unfortunately this defect must be inflicted in the majority of cases in order to rid the patient of the affection. There were certain cases, however, in which this might be avoided—namely, acute cases of great violence of two or three months' standing in which no improvement followed medical treatment. In such cases the nerves might be simply divided and immediately sutured. The result was that the spasm was abolished and the medical treatment of the cause of the spasm was greatly facilitated, and there was a hope that by the time the muscles were in a position to resume their functions the cause of the spasm would have been overcome by continued medical treatment. A case was related in which this method was adopted with perfect success. There was a risk that the spasms might return, but this was minimised by a careful selection of the cases.

Dr. C. WILLENS (Ghent) contributed a paper on

The Technique of Tarsectomy for Talipes.

In congenital talipes the deformity contained three elements, the raising of the heel, the inversion of the foot, and the adduction of the toes, and these three factors were combined in different proportions in different cases. In complete talipes equino-varus he employed bloodless methods less than formerly, for the after-treatment was long and demanded more care on the part of the parents than was usually possible in hospital patients. It was the adduction which it was most difficult to correct. He had given up Phelps's operation, as it demanded prolonged and painful after-treatment, and it was followed by a tendency to relapse. At the present time he preferred tarsectomy. He began by removing the astragalus completely and then he resected the entire width of the anterior portion of the calcaneum. Thus a definite gap was left and then the foot was rotated outwards so as to bring the cuboid into apposition with the tibio-fibular articulation. The incision was made on the outer side and a portion of the skin was excised, so that a linear cicatrix was left. The astragalus was removed in pieces and then the anterior portion of the os calcis was resected. The foot was put up in a plaster-of-Paris splint. Almost all forms and every degree of talipes in older children were amenable to this procedure. In very young children it was suitable for all except slight forms. The functional result was good.

Dr. C. L. STARR (Toronto) said that removal of the astragalus had now been abandoned in America; division of the neck of the astragalus or removal of the head and neck of the bone did all that was required. In young children the results of conservative treatment were very good. In those cases where the results of removal of the head of the astragalus were not satisfactory removal of a wedge of the calcaneum, the base being outwards, gave good results. His practice was to do no tenotomy if the patient were under one year of age but to use plaster-of-Paris. Up to the age of six years tenotomy was sufficient; up to 10 or 12 and in adults tarsectomy was absolutely necessary.

Mr. CUTHBERT said that the most important point was to make sure that the foot was straight. Massage was very tedious.

Dr. LUCAS-CHAMPIONNIÈRE expressed his approval of tarsectomy as giving the best results.

Professor H. TILLMANNS (Leipsic) read a paper on

Puncture of the Brain.

The gist of his remarks ran as follows. "In suitable cases very good results are obtainable both for diagnosis and for treatment. It will be more often practised in the future. It may be employed diagnostically in all cases where the diagnosis is uncertain and where signs of increased intracranial pressure are present. In certain cases the puncture must be immediately followed by a definite operation. Even when the increased pressure is caused by extravasation of blood good results may be obtained. Therapeutically puncture may be employed for evacuating collections of fluid as in hydrocephalus. It may also be employed for injection, as in tetanus, though the intracranial injection of tetanus antitoxin has been replaced by injection of the antitoxin into exposed nerves. The symptoms present may determine the point at which the puncture should be made or it may depend on the part requiring tapping. Blood-vessels and sinuses should be avoided. A small incision down to the bone may be made or the instrument may be passed through the skin. The pressure on the drill should be greater at first and less as the dura mater is approached. A broad pointed drill is best for piercing the bone. Any fluid removed is examined bacteriologically and microscopically. In piercing the brain a grooved needle or a sharp knife can be used. Puncture can be repeated if necessary; in one case Neisser punctured nine times. In the hydrocephalus of children there is no need to puncture the bone as there is so much space between the bones. The lateral ventricle can be punctured from in front, from the side, from above, or from behind. A piece of living human artery forms an excellent permanent drainage-tube for the lateral ventricle."

Mr. DOUGLAS DREW (London) read a paper on

The Selection of the Method of Operating in Cancer of the Rectum.

He pointed out that the results of removal of malignant rectal growths were hardly satisfactory. Some surgeons claimed 25 per cent. of cures, but the mortality rate was greater for some procedures. Mr. Drew was in favour of doing an exploratory laparotomy in all cases, otherwise the possibility

of the existence of secondary growths in the abdomen was left to chance and failure was often due to the presence of secondary growths. A late diagnosis was often responsible for unsatisfactory results, but this late diagnosis was frequently due to the fact that the growth was high up in the rectum. It was important to bear in mind that in two-thirds of the cases the lymphatic glands were involved, and an operation limited to removal of the growth itself was no more likely to be satisfactory in the rectum than in the case of the breast. In growths of the lower part of the rectum the ano-coccygeal and the perineo-vaginal incisions might suffice. The combined method, the abdomino-perineal route, had great advantages. Hæmorrhage was more readily controlled and the extent of the disease could be more exactly determined. If it were found impossible to bring down the bowel to the anus an artificial anus could be made. There was no advantage in leaving an anus in the perineum if no control over the motions were present, for it was difficult to fix suitable pads in this situation.

Mr. LYNN THOMAS read a paper on

A Simplified Method of Performing Prostatectomy by the Combined Routes.

He stated that of the two methods of performing prostatectomy the perineal was the less dangerous, for according to the latest statistics the mortality of the suprapubic method was 7·5 per cent., while the mortality of the perineal method was *nil*. In the method which he advocated the bladder was opened suprapubically and the prostate was detached with the finger; then a special forceps was introduced by the side of the prostate and pushed so as to cause a prominence in the perineum. This was cut down upon and the forceps was pushed through. The prostate was then removed through the lower wound. The forceps was passed in from the perineal wound and by these means a large drainage-tube was drawn down and out at the wound. The results were satisfactory.

The PRESIDENT mentioned that the first prostatectomy which he ever did was done very much in the way described. He had ceased to use the method, as he did not think it necessary for drainage.

Mr. LYNN THOMAS, in reply, said that the relative mortality was sufficient to condemn the suprapubic operation.

Mr. ERNEST H. GROVES (Bristol) read a paper entitled

Surgical Statistics: a Plea for a Uniform Registration of Operation Results.

He remarked that several of the discussions held at this meeting showed that there was no definite agreement as to the average mortality after operations. In order to obtain data for his paper he had written to 56 large hospitals and had obtained answers which gave definite and valuable results. For instance, he had obtained the results of 262 cases of prostatectomy for which the mortality was 23·5 per cent. and of 2620 of appendicitis the mortality of which was 9 per cent. He suggested that the British Medical Association should arrange a scheme by which the operation results of the larger hospitals at least should be collected. The hospitals to which he had written had in all 73,000 major operations a year.

Mr. WILLMOTT H. EVANS (London) read a paper on

Gastrostomy with Especial Reference to Senn's Operation.

In the first place he advocated early operation in all cases of obstruction of the œsophagus, whether simple or malignant, and the test which he suggested for the time at which the operation should be performed was the condition of the weight of the patient. If the weight was definitely diminishing it showed that the patient could not take sufficient food by the mouth. It was useless to wait until he was moribund from want of food. A perfect operation of gastrostomy was required if the patient was not to have the pain and discomfort of leakage of gastric juice. He considered the inverted cone as first devised by E. J. Senn to be the most simple and most satisfactory of all the operations described. The stomach was opened at the operation and the patient could be fed on the operating table. Moreover, the stomach never leaked and the patient had no discomfort from it. He described the operation and pointed out its simplicity.

Mr. EDRED M. CORNER (London) contributed a paper on

The Indirect Treatment of Disease of the Epididymis and Testicle met with in the Course of other Operations.

In some cases during operations in the neighbourhood of the testis the surgeon encountered conditions which might suggest removal of that organ and yet the patient's consent might not have been obtained. In such cases he suggested the resection of all or part of the structures in the spermatic cord. By these means the disease in the testis would be to a great extent starved of its blood, lymphatic, and nervous supplies; a hydrocele dependent upon chronic inflammation of the tunica vaginalis could not recur and infection of the vesicula seminalis and of the bladder could not take place. A case was narrated illustrating this method of treatment. A man, aged 35 years, had a radical cure performed for an inguinal hernia. He had on the same side a hydrocele and when this was examined at the operation it was found that it was due to extensive disease of the epididymis, probably tuberculous. No permission had been obtained for removal of any part of the testis, therefore the spermatic vessels and nerves were clamped in two places about an inch apart and the intervening portion was resected, the vas deferens being treated similarly. The wound healed by first intention and no sloughing occurred. The patient recovered and the structures on the affected side were almost of the same size as were those on the other side.

OBSTETRICS AND GYNÆCOLOGY.

FRIDAY, JULY 31ST.

Professor B. KRÖNIG (Freiburg) read a paper upon

Scopolamine Morphine Narcosis in Labours,

in the course of which he said: "Owing to their increased mental occupation modern women suffer far more frequently from nervous exhaustion which manifests itself in their diminishing power of resistance against the pain of childbirth. A consequence of this is the generally recorded increase in the application of the forceps and of operative confinements in private practice. Pains of labour in these circumstances of nervous exhaustion cannot be called physiological. They may be the cause of serious nervous prostration and childbirth may be followed by serious states of continuous nervous exhaustion. The demand for diminution of pain during childbirth is therefore justified. The means of anæsthesia in childbirth hitherto employed are insufficient, as it is impossible to prolong any anæsthesia over the many hours of labour. I have found a method of anæsthetising which has given me great satisfaction—the scopolamine morphine (dawning sleep). I make use of two separate solutions, one a 1-300 per cent. solution of scopolamine hydrobromas (Merck), the other a 1 per cent. solution of morphine. The first injection is usually made when the patient has pains lasting at least 30 seconds, which recur at intervals of four to five minutes. I inject one and a half decimilligrammes of scopolamine and one centigramme of morphine. The second injection is made an hour later and only consists of scopolamine in a dose of one and a half decimilligrammes. Half an hour after the second injection I begin to test the patient's perceptive capacities. For instance, some object is shown to the patient; half an hour later the same object will be shown to her again and the question put to her whether she has seen it before. If she recognises it we know that the desired stage of unconsciousness is not yet attained and a further injection equal in strength to the second one is given, and so on till by testing the patient's capacities one reaches the desired stage. The patient forgets impressions within half an hour. One then goes on testing the patient's perceptive capacities every half-hour and when one notices that the power of remembering impressions of half an hour before is returning one gives a further injection. All injections, as a rule, except the first only contain scopolamine. In the condition produced by these injections labour pains are perceived but not appreciable. The result is on waking up women will declare they have not felt anything and the practical result is the same as of a total anæsthesia. Women who have gone through several confinements formerly without scopolamine and then with it unanimously admit that their general state of health is this time very much better owing to the utter absence of exhaustion. The method is free from all danger if the dosing is correct. My experience extends over 1700 cases. Atonic hæmorrhage after confinement under scopolamine can with certainty be attributed to overdosing. Disorders of the heart and breathing have never been observed. Of the 1700 cases only two women died,

but the deaths could not be attributed to this method of treatment. One was a case of ruptured uterus or a case of extreme contraction of the pelvis in which the husband refused to allow any interference; the second was a fatal hæmorrhage due to placenta prævia. The method is also free from danger to the child. Ten children out of a hundred are born in a state called oligopnœ, which is also entirely free from danger. The mortality of children has even decreased since the introduction of this method of treatment. Taking the last 500 cases treated with scopolamine I have had only to deplore the death of one child intrapartum, and three children died within the first three days after birth. To sum up this, scopolamine treatment is without danger to the mother or child, and attains the desired end—namely, of completely suspending the perception of pain during labour or at any rate of reducing it to a minimum."

Dr. R. C. BUIST (Dundee) read a paper on

Scopolamine Morphine Anæsthesia in Labour,

in the course of which he reported shortly a series of 65 cases observed in hospital since the hypodermic injection of hyoscine and morphine had been employed as a routine treatment for the relief of pain in labour. Uterine contraction was in the main unaffected and the patient was drowsy between the contractions and sometimes during them. He had no evil results to record in his cases, the temporary mental confusion being of no importance. The method was especially useful in cases of slowly dilating os or prolonged moulding of the head. In private practice he had found it of great advantage and used as an initial dose hyoscine hydrobromide 0·00065 (gr. 1-100th), morphine sulphate 0·016 (gr. ¼). The effects usually showed in about 15 minutes and diminished after about three to four hours, when the repetition of one or both drugs might be indicated. He did not use it if delivery was expected in less than one hour. Dr. Buist also mentioned some cases that had been treated with this method in addition to chloroform by Dr. H. M. Macnaughton-Jones. They were cases of serious abdominal sections—viz., three hysterectomies, two appendicectomies with pelvic complications, 12 salpingo-oöphorectomies, some prolonged vaginal operations, and two very extensive post-operative hernias. All the operations were prolonged and many of the patients old. In most of the cases the night before the operation from one-sixth to one-eighth of a grain of morphine and 1-100th of a grain of scopolamine had been injected. On the following morning a similar injection was given, another half an hour before the operation 1-30th of a grain of strychnine and 1-100th of a grain of atropine. Chloroform was administered with a Vernon Harcourt's regulator. The patients under the influence of scopolamine and morphine need less chloroform to put and keep them under than those who were not. The after-effects of the anæsthetic were less severe and Dr. Macnaughton-Jones, who had been led to use this method after visiting Professor von Krönig's clinic at Freiburg, thought it was especially useful in old and feeble patients and where the operation was likely to be prolonged.

The PRESIDENT of the section (Mr. RICHARD FAVELL, Sheffield) thanked Professor Krönig very heartily for bringing such a valuable paper before the section.

The draft report of the committee appointed last year at Exeter to consider

The Best Means to be Taken to Promote the Earlier Recognition of Uterine Cancer

was then considered by the section.

Dr. F. J. MCCANN (London), as chairman of the committee, said that he would like to make a few remarks. Unfortunately, the committee was not successful in obtaining the coöperation of the Central Midwives Board in drawing up this report. The Central Midwives Board had already issued a circular, but this was not nearly such a good one as that now before the section, and whereas the Central Midwives Board would only issue its circular to midwives in England the committee appointed by the council of the British Medical Association wished its report sent to all midwives in England, Scotland, Ireland, and Wales.

Dr. E. MALINS (Birmingham) in a few words praised the manner in which the report had been drawn up.

Dr. J. J. MACAN (Cheam) proposed, and Dr. H. ROBERTS (London) seconded, the following motion:—

This section approves generally of the draft report of the committee appointed for the early recognition of uterine cancer and requests the council of the British Medical Association to re-appoint the committee.

This was carried unanimously.

Dr. BLAIR BELL (Liverpool) read a paper based upon

A Case of Dermoid Cyst of the Jejunal Mesentery.

The case had been under the care of Dr. J. B. Yeoman of Neston and himself. The patient was a young married woman, aged 24 years, who had suffered from distressing backache for many years, for which she had been treated by ten months' rest in the dorsal position. On examination a tumour was found lying between the uterus and the bladder which proved at the operation to be a dermoid cyst of the mesentery of the jejunum equal in size to a large orange. This was excised, and although the bowel looked congested it was thought it would recover. Subsequently the patient suffered a good deal from colic and other abdominal symptoms, but eventually made an apparently good recovery. A small fæcal fistula had, however formed, but as the discharge was very slight and occasional it was confidently expected that she would soon be quite well. In view of the experience of others—which showed a mortality of 40 per cent when excision of mesenteric cysts was practised—the following methods of treatment were recommended. 1. If the cyst were very large, suture to the abdominal wound and drainage. 2. If small, an attempt at enucleation should be made, and failing this the cyst should be excised together with the loop of bowel surrounding it, for it was too unsafe to excise the cyst alone.

Dr. ALEXANDER DEMPSEY (Belfast) read a short paper on Notes of a Case of Missed Labour.

PUBLIC HEALTH AND FORENSIC MEDICINE.

FRIDAY, JULY 31ST.

The meeting was presided over by one of the Vice-Presidents of the section, Dr. EDMUND HARGREAVES (Sheffield).

Dr. S. G. MOORE (Huddersfield) read a paper on

The Notification of Births in Relation to the Reduction of Infantile Mortality.

He gave first of all a short history of the Huddersfield Act which preceded the general Act of last year and compared the sections dealing with early notification of births with corresponding sections in the Births and Deaths Registration Act, 1874. He stated that in Huddersfield about one-third of the notifications came from midwives, another third from parents or relatives, and one-fifth from the medical men in attendance. He considered that the opposition to the Act was a grave mistake. Certain measures which the Act had rendered possible had been adopted in Huddersfield and he considered that to those measures was very largely due the lessening of infantile mortality in the town.

Dr. A. E. NAISH (Sheffield) read a paper on

The Sheffield Corporation's Dried Milk Scheme,

in which he stated that in August, 1907, five depôts were opened in various parts of the city to which mothers could bring their infants to be weighed and for advice about feeding and management and in suitable cases dried milk was supplied at cost price. The depôts were placed under the charge of a medical man with the active coöperation of the lady health inspectors who followed up the cases at the homes of the children. The supply of dried milk had given the inspectors a more friendly status in certain homes where they had on occasion been treated with suspicion, and where mothers had been lazy or disinclined to carry out instructions a threat of withholding supplies had been effectual. The total number of babies who had attended the depôts was 445, and of these 35 had died, giving a mortality rate of 79 per 1000 compared with 145 in the city of Sheffield. Dr. Naish very properly pointed out that too much importance should not be attached to these figures, for although on the one hand many nearly dying babies were brought to the depôts, yet the high mortality of the first few weeks of life was almost excluded from the depôt statistics.

Dr. JOHN BROWN (Bacup) disapproved very strongly of placing the duty of notifying a birth upon the medical attendant. It was not a question of payment but he objected to the principle of compulsory notification. He was quite in agreement with Dr. Naish that dried milk was better than cow's milk for infants. His experience was that the very poorest did not make use of milk depôts so that statistics from those institutions were not of very great value.

Dr. H. C. PATTIN (Norwich) spoke generally of the success of the Notification of Births Act and argued that it was of value in that it enabled a knowledge to be obtained of the state of nourishment of the mother. In Norwich they were endeavouring to feed the ill-nourished mothers through the agency of charitable institutions, which took action upon notification by the medical officer of health. He expressed a hope that one of the recommendations of the Royal Commission on the Poor Laws would be to coördinate the Poor-law medical work with the sanitary administration and make it a part of the public health service. If this were done the nourishment of necessitous mothers prior as well as subsequent to the birth of their children would become much more systematised than at present was the case.

Dr. J. C. MCWALTER (Dublin) said that the Notification of Births Act had not been adopted in Dublin because the corporation considered it would be useless to notify births unless they were in a position to give food to the infants or the mothers and they had no power under the Irish Poor-laws to give free supplies of milk. He considered that it was a serious matter for the State to take upon itself the burden of rearing children and thus relieve parents of their responsibilities.

Mr. HERBERT JONES (Hereford) pointed out that there was an obligation cast upon the medical attendant to notify a birth to the registrar under the Registration of Births and Deaths Act, 1874, and he considered that the opposition to the Notification of Births Act by the medical profession ought now to stop.

Dr. G. ERIC C. PRITCHARD (London) strongly approved of the early notification of births and suggested that the work of the sanitary authorities might very well be supplemented by voluntary workers. He deprecated the advocacy of any substitute for fresh milk. Dried milk might tide them over a difficulty but fresh milk should be introduced as rapidly as possible.

Lieutenant-Colonel A. M. DAVIES, R.A.M.C., stated that he had found upon examining many brands of dried milk that if made up according to the directions supplied the milk produced would be markedly deficient in fat and therefore a comparatively innutritious food. A fluid was produced resembling milk of a poor quality.

Dr. J. H. TAYLOR (Salford) appealed to medical officers of health not to force upon general practitioners the duty of notifying births. The latter were quite as anxious as the former to do all they could for the sake of humanity, but they considered that all the advantages of early notification could be obtained without imposing upon medical men a task which they resented.

Dr. H. SCURFIELD (Sheffield) considered that in connexion with the opposition to the Notification of Births Act a section of the Association had lowered the profession in the eyes of the community. On the one hand they objected to divulge a secret and on the other hand they were willing to do so for a payment of half-a-crown. He thought it was too much to expect that summer diarrhœa would be stopped by the use of dried milk. They were very careful in Sheffield not to substitute dried milk for mother's milk, but they did not mind substituting it for ordinary cow's milk. The dried milk in Sheffield had had a very severe trial because only a very small proportion of the babies fed on it were normal. The drying of the milk appeared to render the casein more easily digestible.

Dr. W. F. BROWN (Ayr) was strongly of opinion that there would have been much less ill-feeling in connexion with the Notification of Births Act if the medical profession had been consulted as to the duty which it was proposed to cast upon them.

Dr. PRITCHARD read a paper on

The State Regulation of the Manufacture and Sale of Proprietary Medicines and Foods,

in which he pointed out that the sale of secret remedies had increased enormously of late years. Their names were very misleading and there was no guarantee beyond the good faith of the manufacturer that the goods sold answered to the description given either as regards the quality or quantity of the ingredients. He considered that medical men had become the unconscious agents of the manufacturers, for they had accepted without verification many of their most audacious statements and had found it convenient to pander to the popular taste for new remedies by prescribing proprietary medicines and foods of unknown composition. He asked for legislation against the uncontrolled manufacture and sale of proprietary medicines and foods, principally because it was impossible for the individual to protect himself and it was extremely difficult for a medical man to offer advice on the subject. No other country in the world allowed its citizens to be imposed upon by advertisements in the way that was permitted in this country. In most countries the manufacture and sale of such articles were regulated and in some the advertisements were under police supervision.

In the discussion which followed Dr. MCWALTER and Dr. E. F. HANRAHAN (Dublin) took part. The latter drew attention to the fact that the advertisements of patent medicines increased the habit of self-medication. The introduction of ready-made prescriptions, he considered, had resulted in the medical students of to-day learning very little materia medica and knowing nothing of pharmacy.

The meeting of the section concluded with some interesting comments by Dr. McWalter upon the Public Health Acts Amendment Act, 1907.

ANATOMY.

WEDNESDAY, JULY 29TH.

At the conclusion of the discussion on the Teaching of Anatomy, which we have already reported, Professor ARTHUR KEITH (London) opened a discussion on

The Mechanism of Respiration in Health and Disease.

Professor Keith, who illustrated his remarks with ingenious models and diagrams, said: In every department of medical knowledge a period of stability and content is followed by one of unrest and dissatisfaction. At the present moment our knowledge of the mechanism of human respiration, after a quiescent period of some 50 years—for it has changed very little since Hutchinson published his article in Todd's Encyclopædia in 1852—seems to be entering a period of transformation. The discovery and use of the x rays have had a powerful influence in effecting this change, but a number of factors have been really at work, not the least of these being Sherrington's brilliant researches into the reflex coördination of voluntary muscles. The present time, then, one in which the utility of respiratory exercises is being much discussed in the lay and medical press, is most opportune for taking stock of the opinions each one has re-formed of the mechanism of respiration as far as it relates to man in health and in disease. What we aim at, I believe, is not a general expression of belief, but a frank statement of personal observation and personal conclusion, and I therefore propose to introduce the subject briefly to you by recapitulating the various steps which led me to investigate the subject and re-formulate the opinions which I had previously held. Some 14 years ago,[1] while investigating the anatomy of apes, I was struck with the fact that in the majority of that peculiar anthropoid, the gibbon, the joint between the manubrium and the rest of the sternum occurs at the level of the third pair of costal cartilages—a variation which is occasionally to be seen in man. To explain the anomaly I commenced a series of observations on the movements and utility of this joint in man, and found it was the site of a free movement, and that the manubrium sterni, the first pair of ribs, with Sibson's fascia, formed a physiological entity—a kind of lid for the thorax. The thoracic lid is hinged behind to the first dorsal vertebra; its anterior end articulates with the body of the sternum, every elevation of the sternum being accompanied by a movement at the sterno-manubrial joint in those with a normal type of respiration. It was clear that this joint was one, not of minor but of the very utmost importance in the proper performance of the mechanism of respiration. In searching the literature connected with this part of the body I encountered Freund's[2] observations on the malformation of the first pair of ribs, the premature ossification of their cartilages, and the frequent formation in these circumstances of a false joint between the first rib and manubrium. In his opinion these anomalies were congenital and a common cause of apical phthisis. The meaning of

[1] A Variation which occurs in the Manubrium Sterni of Higher Primates, Journal of Anatomy and Physiology, vol. xxx., 1896.

[2] Freund, W. A.: Der Zusammenhang gewisser Lungen Krankheiten mit Primären Rippen Knorpelanomalien. Erlanger, 1859, pp. 127.

the manubrio-sternal joint did not occur to him; but in 1888 Braune,[3] measured the movements which occurred at this joint. German physicians are fully alive to its importance. Professor D. Rothschild,[4] who was the first to grasp the clinical importance of this joint, found that in 126 individuals, showing the *thorax paralyticus*, there were 34 in whom there was no manubrio-sternal movement; in 12 soldiers suffering from phthisis there were five in whom this movement was absent. Rothschild recognises that Freund's theory is untenable, but, in my opinion, he is in error in ascribing the imperfect expansion of the apex of the lung as being due chiefly to a loss of movement at the manubrio-sternal joint. I hope to show you that a free movement of the first pair of ribs and manubrium is not enough to secure a complete expansion of the apex of the lung; for this purpose an efficient movement of the diaphragm is much more essential. The ossification of the sterno-manubrial joint is not a cause of apical phthisis; apical phthisis and loss of movement at this joint are the result of a vitiated action of the inspiratory muscles, especially of the diaphragm.[5] Some years later, about 1903, my attention was drawn to the diaphragm, especially to that part of it—the crura—which, rising from the spine, ascends almost vertically to be inserted into the central leaflet—a part at that time regarded as immoveable. The meaning of the crural part of the diaphragm was unintelligible if the central leaflet were really a fixed part, but happily x rays then came to our aid and it was easy to see that the central part of the diaphragm, the part on which the heart rests, was freely moveable, and that the heart and pericardium underwent a respiratory movement which varied with the type of respiration, but that its respiratory movement was as freely forwards as downwards in most individuals. It was seen, further, and so far as I know Dr. Halls Dally[6] was the first to record the fact, that the diaphragm underwent very little change in curvature as it descended; it acted as a true piston, the abdominal viscera giving it solidity; it was not flattened and drawn away from the chest walls when its fibres contracted; it was, as already said, a true piston, pushing the viscera downwards and forwards against the epigastric region and at the same time raising and pushing outwards the lower ribs. If the abdominal musculature restrained the visceral movements then the force of the diaphragm was entirely expended on the lower ribs—raising them and pushing them outwards in a manner so accurately described by Duchenne and through the lower ribs also helping to raise the sternum. The visceral movement and relaxation of the abdominal musculature were seen to be intrinsic parts of the simplest respiratory act. At an early date Wenckebach[7] recognised the cause of the disturbed respiration of those who were the subjects of marked *enteroptosis*. He saw that, with the sinking down of the abdominal viscera, the diaphragm was thrown out of action owing to the withdrawal of its visceral support, and that respiration was carried on by an upward heaving of the chest brought about by the upper thoracic musculature. One point puzzled me very much at first—one relating to the root or hilum of the lung. It has always been taught that the root is the most fixed part of the lung. But when it became apparent that the central or pericardial area of the diaphragm underwent a respiratory movement then it became certain that the root of the lung must also share in this movement, for the pericardium is, in man, as intimately fused with the root of the lung as with the central part of the diaphragm. We now know that such is the case.[8] In operations within the thorax these movements have been observed; with descent of the diaphragm the strain on the trachea can be felt in the neck. Adhesive mediastinitis prevents the movements of the roots and of the heart and gives rise to the disturbed respiratory movements fully described by Wenckebach.[9] The functional meaning of the root movement will become evident when the respiratory movements of the lungs are discussed. It would take us too far afield to enter fully into the respiratory movements of the ribs and into the action of the muscles, ligaments, and joints which determine these movements. I do not propose to reopen that ever-green controversy regarding the action of the intercostal muscles. I will content myself by pointing out that the results obtained by Martin and Hartwell,[10] showing the action of the internal intercostal sheet to be expiratory, are not reliable: (1) because of the grave injury to the animal entailed by the operation they performed, and (2) that it is physically impossible that the part of the internal intercostals between the costal cartilages can be expiratory in action; and yet that is what they record. Rather would I rely on Duchenne's observations on living human individuals, a reliance strengthened by personal observation, that both of these muscles are in action during inspiration and both may be in action during expiration. One of the chief uses of the intercostal muscles is to resist the indrawing of the intercostal spaces by the negative pressure within the chest during inspiration. There is no manner of doubt that Sibson[11] was right when he said that during inspiration the lower intercostal spaces increase in width and the upper decrease. There are certain anatomical features of the ribs, of the respiratory muscles, and of the costal articulations which are altogether unintelligible on the modern teaching of the respiratory mechanism. I will merely enumerate these features now: the concavity of the upper border of the ribs from the first to the sixth, the convexity of the upper border of these from the sixth to the eleventh; the concave, condylar costo-transverse joints of the upper set; the flat, gliding costo-transverse facets of the lower; the strong and wide attachment of the ilio-costalis to the lower set; the origin of the accessorius from the lower set and its insertion to the upper set; the great strength of the costal cartilages of the sixth, seventh, and eighth ribs with synovial joints between them; the extremely strong aponeurosis which, rising from the transverse processes of the upper lumbar vertebræ, ends on the sharp lower border of the twelfth rib, and from there is continued upwards in the lower four intercostal spaces, thus binding together the lower set of ribs at and just beyond their angles; the fact that the levatores costarum increase in strength and length as one passes from the first to the last ribs, and are so inserted into ribs that it is physically impossible for them to elevate the ribs and thus assist in inspiration. The truth is that the respiratory movement of the lower set of ribs is totally different from that of the upper set; the ilio-costalis works synergically with the diaphragm, while the levatores costarum act as lateral flexors and balancers of the spine and, so far as one can see, are not concerned in respiratory movements.

It is usually taught that expiration is a non-muscular act, an elastic recoil of the lung and costal cartilages. That the elasticity of the lung is concerned in expiration and that there is a certain degree of aid obtained from the torsion of the cartilages when the thorax has been placed in an extreme position of inspiration are well-ascertained facts, but it is also certain that the application and action of that elasticity is controlled by the respiratory muscles. The elasticity of the lung is soon injured if the lung after removal from the body be repeatedly inflated if only to a moderate degree; the elastic recoil from torsion of the cartilages must be slight, for if the muscles be stripped from the thorax of a perfectly fresh subject it will be found that on holding the specimen head downwards the thorax assumes a position of full inspiration; when held feet down the ribs sink into an expiratory position. With the descent of the diaphragm the abdominal muscles yield under reflexes set up in the inspiratory muscles; at least Mislawski and Baglioni obtained an expiratory reflex movement of the abdominal muscles by stimulation of the afferent fibres in the phrenic nerve; it is most improbable that the law of reciprocal innervation of antagonistic muscles, which Sherrington has shown to be valid for so many groups of muscles, should not also hold good for the respiratory muscles. It is inconceivable that the ribs during their

[3] Braune: Der Sternalwinkel, Angulus Ludovici in Anatomische und Klinische Beziehung, Archiv für Anatomie und Physiologie, Anat. Abth., 1888, p. 305.

[4] Rothschild: Verband des Kongresses für Innere Medicin, 1905, p. 87.

[5] Keith, A.: Contribution to the Mechanism of Human Respiration; Proceedings of the Anatomical Society of Great Britain and Ireland, May, 1903.

[6] Dally, J. F. Halls: THE LANCET, June 27th, 1903, p. 1802; Proceedings of the Royal Society, Feb. 6th, 1908.

[7] Wenckebach, K. F.: Ueber pathologische Beziehungen zwischen Atmung und Kreislauf beim Menschen; Sammlung Klinischer Vorträge Neue Folge, Leipzig, 1907. See also article on "Enteroptosis" in Albutt and Rolleston's System of Medicine, vol. iii., 1907.

[8] Keith, A.: The Nature and Anatomy of Enteroptosis, THE LANCET, March 7th, 1903, p. 634.

[9] Wenckebach, K. F.: Loc. cit.

[10] Martin and Hartwell: Journal of Physiology, vol. ii., 1879, p. 24.

[11] Sibson, F.: Philosophical Transactions, vol. cxxxvi, 1846, p. 501.

respiratory movements drag the muscles attached to them as passive burdens. At the commencement of the act of inspiration the muscles of the abdominal wall are felt to harden and regulate the descent of the viscera, thus antagonising the diaphragm; their tension is felt to increase as they again push up the viscera, thus replacing and antagonising the diaphragm. Mr. Shakespeare, the distinguished musician and teacher, has for many years insisted that the essential accomplishment for the singer is to obtain a *balance* of his respiratory movements—that is, the singer must obtain and maintain an accurate and regulated control of the respiratory antagonists so that the movements of the ribs and of the diaphragm and the escape of air must be absolutely under his control. On the theory that expiration is an elastic recoil such control is impossible. The most difficult cases to explain, if the theory that expiration is always under muscular control be true, are those cases where the spinal cord is severed below the exit of the phrenic nerve and where the diaphragm alone keeps up respiration. Nowhere can I find respiratory tracings of such a case. In such cases, whether the patient lies on his back or on his side, the weight of the viscera helps to antagonise and replace the diaphragm; I infer that were such a patient raised upwards into an approximately upright posture his respiratory mechanism would fail.

During the last few years many observations have been made in the changes which occur in the shape of the thorax in passing from childhood to old age, changes which indicate corresponding alterations in the mechanism of respiration, but in this matter much still remains to be done. From the observations of Mehnert[12] and of Wintrich,[13] and from my own observations,[14] there can be no doubt that the ribs sink gradually down into a more oblique position with an increase in age of the individual, due apparently to a loss of tone of the respiratory muscles, especially of the external intercostal sheet on the one hand and of a corresponding loss of tone in the abdominal wall muscles on the other. In those who manifest the *thorax paralyticus*, this costal declension, instead of extending over many years, occurs suddenly, much in the same manner as flat foot or scoliosis, to which conditions *thorax paralyticus* is closely allied. With the onset of emphysema the opposite condition is produced partly by the passive inflation of the lung but chiefly by the respiratory muscles being called vigorously into action. The increased obliquity of the ribs is attended (1) by a decrease of the sterno-vertebral diameter of the thorax; and (2) by a diminution of the functional area and respiratory efficiency of the diaphragm. A study of the age-changes in the shape of the lung emphasises this latter fact. At birth the area of the diaphragmatic surface of the lung is about 40 per cent. of the costal surface; by the eighteenth year it is about 30 per cent.; by the fortieth year it may be less than 25 per cent.; and in the aged it may be as little as 15 per cent. These results are obtained from measurements of a few random samples, but I believe they represent less than the average decrease of the diaphragmatic surface. The importance of the gradual diminution in the sectional area, and therefore of the functional efficiency of the diaphragm, has an important bearing on the incidence of apical phthisis.

It is, however, when one comes to study the lungs that one realises the great blanks in our knowledge of the mechanism of respiration. The manner in which the expansion of the lung is accomplished is usually illustrated by suspending a thin rubber balloon within a bell jar which is furnished with a moveable bottom or diaphragm. When the diaphragm is drawn downwards the balloon becomes inflated. Now, while the principle at work is right, such a model helps to perpetuate two serious errors: it leads the student to suppose (1) that the lung like the rubber sac is equally elastic in all parts of its structure; and (2) that it expands equally in all directions. As regards the lung it is manifest that it is made up of structures of varying degrees of elasticity, the veins being the least elastic and the arteries the most; further, each of these structures increases in elasticity as it leaves the root and approaches the surface of the lung, the superficial zone being the most elastic and the root zone the least. The expansion of the lung is quite unlike the inflation of a rubber sac; it resembles rather the opening of a fan, the bronchi and blood-vessels representing the rays of the fan, while the pulmonary substance represents the texture spread on the rays. The respiratory movement is wave-like in character, commencing at one end of the lung and spreading to the other. In the air-containing tissue, lying between the rays of the pulmonary fan, it is the infundibula, not the alveoli implanted on their walls, which expand most; it is the infundibula which are the essential expansible elements of the lung. One must not lose sight of the fact that side by side with the infundibula are thin-walled venous spaces, which must undergo a simultaneous expansion, and that with inspiration not only is the atmospheric content but also blood content of the lung increased. Perhaps the error of regarding the lung as expanding equally in all directions is even more serious than that of regarding it as equally elastic throughout. With inspiration the lung cannot expand backwards, because the dorsal part of the spine and that part of the ribs to which the erector spinæ is attached are stationary, or in the lower part of the thorax actually move forward. It is true that Dr. Dally[15] and others have demonstrated that with inspiration there is an unbending of the spinal curvature so that the lower dorsal vertebræ actually move backwards, but since these vertebræ carry the ribs and thorax and thoracic contents with them that movement cannot cause the lung to expand backwards. Nor is there a direct expansion on the mediastinal surface of the lung, excepting in so far as the depression or descent of the heart with the diaphragm allows it to expand. As regards the apical surface of the lung—the surface in contact with Sibson's fascia and the first rib—that part of it which lies directly in front of the neck of the first rib will not be influenced by the elevation of the thoracic lid, for it lies in the axis of movement. On the other hand, the costal and diaphragmatic surfaces are areas of direct expansion; by the movement of the ribs the lungs are extended outwards, the back to front and side to side diameters of the infundibula are increased; by the descent of the diaphragm or by the costal elevation of the whole thorax, as in straightening of the spine, the vertical diameter of the infundibula is increased. For the proper expansion of the infundibula—an expansion in each of their three diameters—it is essential that the diaphragm as well as the ribs should come into action. Putting the matter in general terms the inspiratory movement of the lungs is a forward and downward and outward one, and in this movement the root of the lung must share to allow the apical and dorsal parts of the lung to expand. The lung is usually worked at 10 per cent. of its full capacity; it may, in those who lead sedentary lives, fall to even 5 per cent. In such reduced breathing the whole lung is certainly not equally expanded. Dr. Clive Riviere[16] and others have noted that in such cases the apex of the lung is the part least expanded—the part farthest removed from the actively expanding diaphragmatic or costal surface. It is known from direct observation that the negative pressure in the thorax is least in those parts farthest removed from the actively dilating surfaces of the lung. Harrison's sulcus occurs on each side of the thorax at a level of the domes of the diaphragm—the parts of the thorax which feel first and most the negative pressure set up by its action. If tracings be taken over the epigastrium and over the apex of the lung, it will be found that the descent of the diaphragm precedes the descent of the apex of the lung. Now in the reduced or "lazy" type of respiration the only parts of the lung properly expanded, and the expansion of a part of the lung means not only a proper air but also an effective blood and lymph circulation, are those lying directly under the actively expanding parts of the chest—the diaphragmatic or costal surfaces of the lung. The part most remote from these influences is the dorsal apical part of the lung—the part which is known to be the usual site for the onset of pulmonary tuberculosis—a point about one and a half inches below the neck of the first rib. The primary focus is usually deep to the surface of the lung, near the termination of the larger bronchi that ascend to the apex of the lung, at the line where the superficial zone of greater elasticity merges into the deeper zone of diminished elasticity.

[12] Mehnert, E.: Ueber Topographische Altersveränderungen des Atmungsapparates, Jena, 1901.
[13] Wintrich, M. A.: Quoted by Mehnert.
[14] Keith, A.: Nature and Anatomy of Glénard's Disease. THE LANCET, March 7th, 1903, pp. 631, 635, and March 14th, p. 709.
[15] Loc. cit.
[16] THE LANCET, June 8th, 1907, p. 1603.

The point I wish to emphasise is that a proper action of the diaphragm, above all the other parts concerned in the mechanism of respiration, is essential for the proper expansion of the apex of the lung; the conical shape of the thorax insures that a descent of the lung must be accompanied by an expansion of the apex in every direction. However strong the action of the upper ribs may be, they cannot influence the apical part of the lung itself, and at best they can secure an expansion in only two diameters. Further, it is well known that gymnastic training, which in the majority of cases leads to an exaggerated and unnecessary development of the costal respiratory movements and expansion of the chest, is attended with a partial or complete loss of the natural action of the diaphragm. It is also well known that in men so trained not only heart trouble but also apical phthisis is apt to occur, as may be seen in the writings of Lieutenant-Colonel Davy and Lieutenant-Colonel Deane.

A brisk discussion followed, in which several of Professor Keith's contentions were controverted by the speakers.

Dr. D. LAWSON (Banchory), who spoke on the subject largely from a clinical standpoint, said that in tuberculous disease of the lung friction sounds were often heard at the apex. A study of the lung movements under the x rays showed the earliest sign in phthisis to be an impaired movement on the affected side. In asthmatic attacks a wavy movement of the diaphragm affecting both sides was seen by the Roentgen rays. Clinicians could often diagnose an early apical movement of the lungs by finding the diaphragmatic movement limited on examination from behind. A few cases showed a similar limitation from the front and not the back. This movement could be called paradoxical, for it was not clear why the diaphragm movement should be affected before inflammatory trouble had limited the apical movement.

Dr. J. F. HALLS DALLY (London) said that a study of comparative anatomy threw much light upon the mechanism of respiration. He believed the respiratory act from beginning to end to be muscular. Expiration was brought about by muscular action as well as inspiration, and, following Sherrington's law for the limbs, be regarded the diaphragm in active downward contraction as synergic with the powerful spinal muscle-group which produced extension of the vertebral column, and in expiration as antergic to the abdominal muscles, only a relatively small proportion of expiration being due to elastic recoil of bones, ligaments, and soft parts. The attempt to estimate chest expansion by tape measurement at the level of the nipples, as practised for candidates for the public services and for life assurance, taken by itself was of no practical value, since in males the prevailing "type" of respiration was diaphragmatic, which connoted movement of the abdominal wall. Thoracic measurements to be of value must be taken in conjunction with those of the abdomen, for often a man might have poor thoracic but good abdominal breathing. A candidate after suitable gymnastic training could increase his chest-girth by contracting the large muscles of his shoulder-girdle, but this did not imply increased pulmonary mobility. A chest expansion of less than two inches did not necessarily indicate lessened respiratory capacity, nor did one of two inches or more show that the respiratory capacity was even up to the average. He regarded the inspiratory backward movement of extension of the vertebral column as an important aid to the downward pull of the diaphragm in promoting free access of air to the apices of the lungs. The maximum movement took place at the upper end of the vertebral column, and gradually diminished from above downwards. Some slight extension took place through the medium of the intervertebral discs, but much of the usefulness of this vertebral movement consisted in the fact that the crura of the diaphragm were thus placed in a position of best mechanical advantage to exert a direct downward pull upon the lungs. The thoracic movement was also considerably aided towards the end of the inspiratory act. "Cog-wheel" breathing was due to interrupted diaphragmatic action which might replace the limitation of movement which took place early in pulmonary tuberculosis. He regarded both as in nature reflex and probably due to toxic influence.

Dr. F. O. B. ELLISON (Dublin) pointed out that as the x rays did not show the actual diaphragm on the screen but only the neighbouring viscera, the appearance was apt to be deceptive. He also asked how, if expiration was an active muscular act, respiration could be carried on in a dog whose spinal cord had been divided just below the origin of the phrenic nerves, and hence all the muscles of the thorax and abdomen paralysed, yet such a dog could breathe and live comfortably for an indefinite period. He also showed how straightening of the dorsal curve of the spine must cause the anterior ends of the ribs to diverge and hence assist inspiration, as the two articulations of each rib to the spine were not the same distance from the centre of curvature, concluding by drawing attention to the great differences in the development of the bronchial muscle in man and other animals.

Dr. D. WATERSTON (Edinburgh) considered that Professor Keith had under-estimated the elastic recoil of the lungs or else how was it that paralysed people could breathe perfectly well without their abdominal muscles?

Professor J. SYMINGTON (Belfast), Professor C. J. PATTEN (Sheffield), Professor A. ROBINSON (Birmingham), and Dr. A. C. GEDDES (Edinburgh) also took part in the discussion.

Professor KEITH, in replying, acknowledged the difficulty of certain objections which had been raised to his thesis, but maintained that its fuller exposition would uphold its contentions.

THURSDAY, JULY 30TH.

The following is a brief summary of the proceedings in this section to-day.

On the Imbedding of the Human Ovum.

Dr. T. H. BRYCE (Glasgow) demonstrated a series of sections of a human ovum estimated to be about 14 days old. He pointed out the main features of such an early stage of development and discussed some of the principal peculiarities. —There was no discussion.

Fractures of the Shaft of the Femur from an Anatomical Standpoint.

Mr. A. RALPH THOMPSON (London) showed specimens of spinal fracture of the shaft of the femur. He asserted that the line of the fracture ran with the grain of the bone, that such fractures were always comminuted or irregular, and that great displacement of one or more fragments commonly occurred, the latter fact pointing to the necessity for wiring if the treatment was to be successful.—There was no discussion.

Right-handedness.

Professor G. ELLIOT SMITH (Cairo) denied the general assumption that a right-handed person made practically no use of the right half of his brain. He claimed that there was evidence to show that functions were differently specialised in the two hemispheres, skilled movements being particularly localised in the left hemisphere and vision and audition in the right hemisphere. In association with this he drew attention to the fact that asymmetry of the skull did not indicate a degenerate or retrograde condition, but on the contrary was a normal occurrence.

Fusion and Assimilation of Atlas and Occipital Bone and Manifestations of Occipital Vertebræ.

In a second communication Professor ELLIOT SMITH discussed the question of vertebral fusions, particularly with regard to the suboccipital region, and he concurred with Dwight's opinion that fusions and separations in the vertebral region were indications that the vertebral column was still in an unstable developmental condition.

Applied Anatomy.

Under the heading of applied anatomy Professor ELLIOT SMITH drew attention to the very great displacement of organs which might result from pleuritic effusion and to the great dangers due to the presence of a too long sigmoid flexure.

Professor PATTEN, Professor FRASER, and Dr. BRYCE took part in the discussion which followed the reading of Professor Elliot Smith's papers.

Notes on the Maxillæ and Palatines in Primates.

Professor J. R. ANDERSON (Queen's College, Galway) read a paper dealing with the relative lengths of the maxillary and palatine sutures in primates.—There was no discussion.

An Unusual Lung Abnormality.

Dr. WATERSTON gave an account of a lung in which the apical part was cleft into an inner and outer lobe by a fold of pleura in which the vena-azygos major was inclosed. He

pointed out the probable mode of its formation and the fact that the condition was normal and usual in some animals.

Variations in the Form of the Stomach in Man.

Dr. WATERSTON also exhibited a series of stomachs showing varying forms but giving no indications of pathological conditions. He believed that they were all normal, that they were fixed phases of the changes in form of the stomach, and that they showed definite indications of the division of the stomach into storage and digestive sections.

Professor ELLIOT SMITH, Professor FRASER, Professor SYMINGTON, and Professor ANDERSON took part in the discussion which followed.

Changes in the Skull in Acromegaly.

Dr. GEDDES described the changes found in the skull of an acromegalic patient who had been under observation for a number of years. His investigations led him to the conclusion that acromegaly was a symptom, not a disease, and that the processes of acromegaly affected the ontogenetically and phylogenetically younger parts of the body.

Professor PATTEN, Dr. WATERSTON, and the PRESIDENT of the section took part in the discussion.

Meso-photography.

Professor PATTEN described a new method of photographing embryos by means of a lens of special construction attached to a camera. He called the method meso-photography, as it was neither "micro-" nor "macro-," but reproduced objects at about their natural size. He had been led to adopt it by the distortion and loss of transparency produced in embryo by the old fixing methods. By this new method living embryos could be photographed. Professor Patten showed upon the screen some excellent pictures which he had obtained in this manner.

The Post-nasal Development and Growth of the Accessory Sinuses of the Nose.

Professor SYMINGTON and Dr. P. T. CRYMBLE showed a series of lantern slides of Dissections of the Air Sinuses connected with the Nasal Cavities, by means of which they were able to demonstrate the various stages of growth of the sinuses and their relationships to adjacent parts.

Development of the Teeth in Man.

Professor SYMINGTON exhibited in his own and Dr. J. C. RANKIN'S names a series of x ray photographs of Teeth in Various Stages of Development, and he discussed the advantages of the process over other methods for certain purposes. —There was no discussion.

A series of interesting exhibits was set out in the anatomical laboratory adjoining the theatre in which the section held its meeting. It may be said that the "laboratory" itself afforded an excellent object lesson to the many visitors who had in their student days worked in dissecting-rooms of an older order. The large plate-glass windows practically forming one wall of the room, with the microscope bench beneath them, the parquet floor, metal tables, and well-stocked wall-cases containing models and specimens, make a really attractive laboratory in which the Sheffield student can perform his dissections. Upon the tables the following exhibits were shown:—By Dr. C. BRADLEY: Models of an Embryo, six millimetres long, of the Flying Squirrel. By Professor SYMINGTON: Skiagrams of Developing Teeth, including Skiagrams of Fœtuses and of Children from Birth to Puberty. By Dr. H. M. JOHNSTON: Specimens illustrating the Movements of Inversion and Eversion of the Foot. By Dr. R. J. GLADSTONE: (1) A Specimen of Cervical Ribs, and (2) two cases of Diaphragmatic Herniæ. By Professor PATTEN: (1) Arrest of Development of the Diaphragm (Human Fœtus); (2) Absence of the Upper Cornu (Unilateral) of the Thyroid Cartilage; and (3) an Anthropoid Feature in the Hallux of a Human Fœtus. Dr. J. S. FRASER (Edinburgh) showed a complete series of Microscopical Preparations to demonstrate the development of Mucous Polypus of the Nose from its earliest stages.

DENTAL SURGERY.

WEDNESDAY, JULY 29TH.

This section, which was well attended, met under the presidency of Mr. F. HARRISON (Sheffield).

The PRESIDENT, after a few words of welcome and of acknowledgment, said that the existence of a section dealing with dental surgery, although not altogether desired by some, was a matter of general rejoicing to all interested in the progress of that science and art. He proceeded to speak of the investigation of the physical condition of school children, which he welcomed, for the examination was to be made by medical men who, together with other diseases, would report upon the condition of the teeth, and much good would arise by bringing home to medical men, education committees, and the public the horrible condition of the teeth of the rising generation. Dental disease was the most widespread of all disease, not only here but in other countries, and for this if for no other reason demanded investigation. Bad teeth operated on nutrition by impaired mastication, promotion of septic absorption, and actual infection by many micro-organisms. Fortunately, medical men now recognised the wide influence of dental disease. It would be scarcely making an untrue statement to say that the etiology of the commonest of all diseases, dental caries, was practically unknown, and it was a vast field open for investigation, but the investigation must be undertaken not by dental surgeons and medical practitioners engaged in the routine of every-day work but by skilled investigators with the advantage of proper conditions for their work. The fact that at the present time 80 per cent. of children under 12 years of age were affected by dental disease was an object-lesson for the medical man, the mother, and the teacher.

Mr. HERBERT TILLEY (London) then opened a discussion upon

Antral Disease in its Relation to General and Special Surgery.

In the course of his remarks he said: The diseases of the maxillary antrum appeal both to the general as well as the special surgeon, and the latter comprise the rhinologist or surgeon with special knowledge of nasal diseases and the dental surgeon whose studies have been focussed on pathological conditions of the teeth. Speaking generally, it may be said that the general surgeon will be more familiar with those diseases which cause obvious external swelling or deformity of the upper jaw or of the adjacent soft parts, and so he will be consulted for large alveolar abscesses, dental cysts, and malignant disease of the antrum, and necrosis of the upper jaw. Since these affections are also frequently seen by the rhinologist and dental surgeon we may as well discuss them at once.

Alveolar abscess.—When this occurs in the upper jaw at the root of one of the incisor teeth, the swelling may appear in the floor of the nose, just within or beyond the vestibule, and cause nasal obstruction of a marked degree. When the canine tooth is affected the tumefaction may appear externally at the side of the nose below the nasal bone, and may seem at first sight to have little to do with a diseased tooth. If such abscesses become chronic numerous cholesterin crystals are often found in their contents.

Dental cysts.—These by their expansion often cause considerable external deformity, and may so encroach upon the antral cavity that the sinus is almost obliterated.

Treatment.—The most effectual, speedy, and certain treatment is to reflect the mucous membrane from the buccal aspect of the cyst wall, freely open the cyst, remove all its thin, bony wall, especially that portion which projects into, and often almost entirely obliterates, the true antral cavity, then remove the inner antral wall together with the anterior half of the inferior turbinal, so that a large permanent opening into the nasal cavity is provided. Finally, the bucco-antral incision is sutured with a couple of horse-hair stitches and immediate union of the wound will take place. Practically there is no after-treatment beyond the use of a warm alkaline nasal douche for two or three weeks.

Malignant disease of the antrum.—Sarcoma and epithelioma are the commonest forms of malignant disease which affect the antrum.

Symptoms.—Pain of an intense and boring character is often an early symptom in epithelioma. With increase of the growth there may be distension of the anterior antral wall, producing swelling of the cheek, depression of the hard palate, nasal obstruction, and bleeding from the nose. Epiphora is a not uncommon symptom and is due to the invasion of the tear duct by the growth. Transillumination reveals marked opacity of the antrum, and exploration of the antrum through the inferior meatus shows no sign of pus but is often followed by the flow of a few drops of blood through the cannula. The only efficient treatment is a free excision of the upper jaw and the operation should be performed

directly the diagnosis has been made. Care must be taken not to mistake a large cyst for malignant disease of the antrum, and the following points will enable a diagnosis to be made:—

Cyst.	*Malignant Disease.*
Pain slight or absent.	Severe pain of a neuralgic character.
Transillumination more or less clear.	Quite opaque.
Fluid contents on exploration.	No discharge, or only a few drops of blood.

Necrosis of the upper jaw involving the antrum.—This is usually the result of tertiary syphilis. There may be slight swelling or œdema of the cheek, with obliteration of the folds between the ala nasi and the cheek. The diagnosis will depend on the above signs, together with a history of syphilis and the presence of luetic lesions in other parts of the body.

We may now pass to the acute and chronic inflammatory lesions of the antrum, which are of special interest to the rhinologist and dental surgeon. Before discussing the causative factors of antral inflammation let me point out one or two anatomical features of the antrum which may be of surgical importance. 1. The antral cavities often vary much in size in the same individual. 2. When there is a tendency for the palate to be high and the face is of the narrow type then the alveolar process will be thick and the antrum relatively small. 3. The inner antral wall is of interest in connexion with the more radical operative measures and is divided into two parts by the line of attachment of the inferior turbinal; the anterior and lower triangle is bony and corresponds to the inferior meatus; the upper and posterior is mainly membranous and forms a portion of the middle meatus, and in it is situated the natural ostium of the antrum. 4. The actual cavity of the antrum is often very irregular and may be more or less divided up by bony septa. 5. Finally, certain of the lower anterior ethmoidal cells may extend externally into the inner, posterior, and superior regions of the roof of the antrum.

Etiology of antral suppuration.—It is now a well-established fact that infection of the antrum may arise by way of the nasal cavities or through disease of certain teeth. Acute antral suppuration by the intra-nasal route is most commonly due to infection by the pathogenic organisms of certain of the acute specific diseases. Of these influenza has been the most active, although the worst cases of bilateral suppuration of all the nasal accessory sinuses which I have seen followed enteric fever, and one of the most interesting was met with in a lad of nine years of age, where acute frontal sinus suppuration necessitating external operation complicated scarlet fever. A second common cause of antral suppuration is infection from a diseased tooth, an apical abscess, or suppurative periodontitis. Chronic suppuration within the antrum is usually the sequela of an acute attack of inflammation which has failed to undergo resolution. Such failure may be due to the virulence of the initial inflammation, to defective drainage caused by pathological intra-nasal conditions, or to the continuance of the initial cause of the inflammation—e.g., an apical dental abscess which continues to supply infective material to the inside of the antrum. And finally, a debilitated state of the patient's general health will be a strong predisposing factor in the formation and continuance of chronic suppuration in one or more of the sinuses.

Acute antral suppuration.—When the inflammation is the result of dental infection the earlier symptoms are usually located around the tooth. The prognosis will be particularly good if the offending tooth be removed early and suitable treatment be instituted. As to treatment, when antral suppuration is obviously of dental origin the offending tooth should be removed and free communication with the antrum made through the alveolus by means of a suitable perforator. The sinus should be gently irrigated with a warm sterile, normal saline solution, boric lotion, or weak Condy's fluid. The alveolar opening should be kept open by a suitable plug and irrigation practised twice or thrice daily at first and at increasing intervals as the amount of pus observed in the returning fluid becomes less. When after an interval of from five to seven days no pus is seen in the basin after irrigation the plug may be finally removed over night and by the morning the alveolar perforation will be nearly closed. When antral suppuration is of nasal origin the prognosis is less favourable and the treatment may be less simple for reasons which will be discussed immediately. In these circumstances we must endeavour (1) to treat the primary constitutional disease by rest in bed and such medication as the nature of the general infection may indicate; (2) to allay the local discomfort caused by the complicating acute sinusitis; (3) but locally our chief efforts must be directed to promoting the free and spontaneous discharge of pus from the antrum by way of the natural ostium, and these ends may be attained (*a*) by directing the patient to lie in bed with the diseased antrum uppermost; (*b*) the application of cocaine and adrenalin solutions to the regions around the middle meatus—this may be done every four or six hours; (*c*) scarification of these regions is recommended by Lack and my experience confirms the efficacy of the method; and (*d*) in the intervals of such treatment inhalation of mentholised steam will have a similar effect in inducing contraction of the swollen intranasal mucosa. It will thus be seen that the clinical course, prognosis, and treatment of acute suppuration of dental origin are more favourable than when the sinus is infected by way of the nose.

Chronic antral suppuration.—I have already said that chronic antral suppuration is the sequel of an acute dental or intranasal infection which for some reason or reasons has not undergone resolution. Whatever be the original cause of the trouble the patient will usually complain of one or more of the following symptoms: (*a*) an unpleasant odour in the nose which is often most marked on lowering the head; (*b*) headache, often over the corresponding eye, and the aching may have a marked periodicity—e.g., it is peculiarly apt to occur in the morning and pass off about mid-day, and this periodicity has often led to its being mistaken for a malarial symptom, especially when the patient had resided in regions where that disease is endemic; and (*c*) more or less nasal obstruction. Cough, liability to colds in the head, anæmia, indigestion, anorexia, and general debility are often complained of. With regard to diagnosis, in a suspected case of chronic antral suppuration our first duty will be to examine the teeth on the same side and also the corresponding nasal cavity. Transillumination is a very valuable diagnostic help if used with discretion and if taken in conjunction with the other symptoms exhibited by the case.

Exploration test.—This is a final and certain test when other means fail, as they frequently do. A fine trocar and cannula are passed through the inner wall of the antrum underneath the inferior turbinal and some warm normal salt solution is then injected into the antrum and returns from the nose; the presence of pus in the returning fluid can thus be determined with absolute certainty. I have frequently found that perforation and irrigation of the antrum have been immediately followed by pain in a certain diseased tooth. As to prognosis, as in the acute inflammation, chronic suppuration of dental origin is of better prognosis than when due to intranasal infection. In discussing the treatment of a chronic antral empyema we must remember that we are dealing with an abscess of a bony cavity the walls of which cannot contract, and that if we are to check the suppuration and promote the return of the mucous membrane to a natural condition we must provide for free, unhindered, spontaneous drainage. These ends may be secured by drainage through the alveolus from the canine fossa or by an opening from the antrum into the nose. The principles which should guide us in the selection of the method of operation is the main object of my theme to-day, and it is upon the method of treatment that discussion will probably centre, and differences in opinion based upon experience will be as numerous as they are valuable.

Alveolar drainage.—If the clinical history seems to show that the antral suppuration was of dental origin, and examination has proved that the second bicuspid or the first or second molar teeth were diseased, then it may reasonably be argued that such a tooth or teeth should be removed, a free communication made with the antrum, a plug or tube inserted, and frequent irrigation practised until the discharge lessens or completely ceases. In my own practice, as well as in those of my colleagues and of dental surgeons, I have seen a large number of failures with alveolar drainage. The causes of some of these have been very obvious—e.g.: (1) drainage-tubes which projected half an inch above the level of the antral floor and therefore did not drain until the antrum was already half filled with pus; (2) drainage-tubes of narrow calibre which do not drain at all; (3) tubes which

are too short; and (4) tubes which have a free opening into the mouth. We may say, then, of alveolar drainage that it will probably be successful in all acute cases of dental origin and in a moderate proportion of chronic cases due to the same etiological factor. A plug is probably more satisfactory than a tube, because unless the calibre of the latter is comparatively large drainage does not take place and the antral cavity may be contaminated by infection from the mouth.

Drainage through the canine fossa.—By this method a large opening is made in the canine fossa, the soft parts and periosteum having been first reflected from the bone. Through the opening the mucous membrane may be curetted and the bucco-antral opening is kept open by rubber plugs, wicks of gauze, &c. One only mentions this operation to condemn it, and anyone who has ever employed it will have vivid recollections of the difficulties involved in keeping the opening patent, of the pain, of the difficulties of irrigation, and, above all, of the failure to cure.

Intranasal drainage.—The advantages of treating a chronic antral suppuration by this route are numerous, and extended experience has proved beyond cavil or dispute that this method is the best for all cases where the primary infection has been by way of the nose, and for those instances of chronic empyemata of undoubted dental origin which have failed to get well when drained by the alveolar route, or where there are reasons for not adopting that method.

[Mr. Tilley passed on to consider the Caldwell-Luc and the "simple route" methods of intranasal drainage, and proceeded:]

To sum up, I may state: 1. The alveolar route is especially suitable for acute empyemata of dental origin; that it will cure a certain number of chronic cases due to the same cause, and the likelihood of success is greater the earlier the method is adopted. The method is not suited for cases of intranasal origin. A solid plug will be more suitable than a hollow one. 2. Intranasal drainage by one or other route is a more satisfactory method for dealing with chronic antral abscess. (*a*) Because free drainage into the nose is established and this is continuous and permanent, and it involves no trouble to the patient beyond irrigation with some mild antiseptic for a few weeks after the operation. Contamination from the mouth is also prevented and the sacrifice of a useful though possibly not a sound tooth will not be called for. (*b*) From the patient's point of view there are no painful after-dressings, and neuralgic pain, so frequent after alveolar puncture (so that the patient often dreads the use of the syringe), is almost unknown with the more radical procedures. (*c*) Convalescence from the more radical Caldwell-Luc operation is rapid: the patient is rarely detained indoors beyond five to seven days. The simple intranasal operation is often done in the out-patient department of hospitals and the patient goes home a few hours later. With regard to treatment based upon the opsonic index or the use of vaccines, I have had only a small experience and not sufficiently satisfactory to enable me to regard it as a practical mode of treatment. So far as I can gather, those who have carried out the opsonic treatment have been hampered by the variety of organisms present in the individual patient. From experts who have had much experience in this matter it would be interesting to know if the opsonic or serotherapeutic treatment had been curative; the length of time required to effect a cure in a chronic case, say, of 12 months' duration; and whether such treatment might be useful in those patients where improvement but not complete cessation of the discharge had resulted from the adoption of those surgical measures already indicated. It will thus be obvious to you that apart from acute cases of obviously dental origin where alveolar drainage may be adopted with every hope of success I am pleading to-day for the more frequent adoption of the intranasal drainage, a method which has more advantages than, and none of the drawbacks of, the alveolar method, while its employment is in complete accord with those general principles of surgery which should guide us whenever we endeavour to cure chronic suppuration of a bony-walled cavity.

Mr. ARTHUR S. UNDERWOOD (London) continued the discussion. He had recently made sections of a number of skulls at the Royal College of Surgeons of England for the purpose of examining the antra. The antrum in size and development stood in definite relation to the development of the cheek teeth: in 160 cases the antrum extended backwards beyond the third molar forwards to the first bicuspid. When normal the floor descended between the molar roots and below the floor of the nares. The roots of the teeth were in relation to the wall of the cavity rather than the floor. When the third molar erupted it was contained firstly in the central cavity itself covered by a dome of bone which as the tooth was erupted disappeared. As the jaw became edentulous either bilaterally or unilaterally the floor of the antrum rose. In one case illustrated this rise was three-quarters of an inch above the antral floor of the opposite side. Antral septa were found in 19 out of 33 cases examined; 14 were on the left side and five on the right. The same figures applied generally to the other series of 160 skulls. In eight cases the left antrum was smaller than the right. In these cases of decreased size or abnormal size one or more teeth were cut off from the rest of the antrum by septa passing up from the roots. Sometimes the septa were multiple. Chronic abscesses were also found in some of the cases examined. In one of the slides shown the right antrum was normal, but the left showed a large chronic abscess around a tooth. The abscess, although perforating the alveolus on the palatal side, had not perforated the antrum; the whole tract of the sinus was protected on the antral side by a marked thickening of the bone, and to such an extent had this thickening progressed that the antral cavity was greatly reduced in size. Other instances of this over-development of bone were shown on the screen. Trans-illumination of the skulls showed that in some instances the actual skull was too thick to show and corroborated Mr. Tilley's remarks. In conclusion, Mr. Underwood thought it would be possible to map out the extent of the antrum in a given case by a careful examination of the existing teeth, and stated that at Professor Keith's suggestion he was continuing his investigations.

Mr. KENNETH W. GOADBY (London) spoke of the bacteria found in cases of chronic antral suppuration and showed a table which he had compiled from a bacteriological investigation of 14 cases, 13 of which had been, or were, under vaccine treatment. In many cases the infection was mixed. The organisms isolated included staphylococcus aureus, albus, and viscosus, streptococcus brevis, bacillus fusiformis aerogenes, Friedlander's bacillus, saccharomyces neoformans, and several distinct bacilli which were not identified. In one case in which diplococci were found the bacillus tuberculosis was also demonstrated by inoculation into a guinea-pig. The patient was treated by operation and three months later he developed tuberculous epididymitis. The organisms noted in the other cases were all identified by cultural methods and in five cases the staphylococcus aureus isolated was tested in rabbits. In each instance 0·5 cubic centimetre of an emulsion of a 24 hours' growth on agar in five cubic centimetres of broth produced death when injected intraperitoneally. The saccharomyces isolated was also tested and in two instances produced death. On the death of the animal large masses of growth in the lungs and kidneys were found simulating sarcoma to the naked eye. The other organism to which he desired to draw special attention was the bacillus fusiformis aerobius, apparently an aerobic variety of that first noted by Vincent. The characters of the organism were as follows. It stained by the ordinary aniline dyes but not by Gram's method. On agar the growth was scanty and development took place best upon serum agar. It was not motile and did not form spores and glucose. Lactose, maltose, caffeine, salicin, cane sugar, inulin, and dulcite were not fermented by it. Subcutaneous inoculation into guinea-pigs was followed by a local swelling at the point of inoculation which persisted for a week or more, gradually resolving; the swelling if increased was found to contain a pus in which the organism might be found during the first few days. Mr. Goadby showed a lantern-slide to illustrate this organism and continued: "Two points I desire to particularly emphasise: (*a*) that antral suppuration occurs by infection from the alveolus without the intervention of carious or abscessed teeth. In alveolar pyorrhœa masses of granulation tissue seen on extracted teeth on section show a process of rarefying osteitis spreading into the bone, often with small masses of bone buried in the tissue, while the tissue farthest removed from the advancing inflammation shows fibrous sclerosis. The second point to which I desire to draw attention is the method of vaccine treatment. In my series of cases three

are still under treatment and the tuberculous one was not treated by tuberculin. Of the remaining 10, all were of more than a year's duration, one of 15 years, and one of eight years, and in all a copious discharge of pus was present. The treatment adopted was the determination of the infecting organism by bacteriological and opsonic means; secondly, immunisation by means of vaccines starting with an appropriate stock of vaccine; and finally, whenever necessary, with a vaccine prepared from the patient's own organisms. Bacteriological examination was further made from time to time and the diminution of an absence of the organisms immunised against noted and the case treated accordingly. The results of the treatment have been most encouraging; in all cases *a great improvement in the patient's general health* has occurred and the anæmia and toxæmia, which is present in practically all cases of chronic antral suppuration, disappeared, the headache being always relieved. In most cases a diminution in the pus has taken place, in six cases the discharge has stopped, and in one case the discharge is now intermittent. There is no disguising the fact that in certain cases antral suppuration persists for many years despite operations, constant use of antiseptic lotions, &c. The discharge in some instances tends gradually to diminish, due no doubt to the gradual immunisation of the patient to the infecting organisms so that an attempt to accelerate their process by immunisation is a directly proper procedure, while the inoculations necessary are by no means frequent. Free drainage is essential, but free drainage is not necessarily the removal of the whole anterior wall of the cavity, while in those not infrequent instances where the patient shrinks from the complete operation and where also the frontal sinus is involved the method should certainly be tried.

Dr. URBAN PRITCHARD (London) agreed that curetting should be done with the greatest caution. From Mr. Underwood's observations and promised researches he anticipated much advantage in the possibilities of determining the extent of given antra.

Mr. W. STUART LOW (London) most decidedly disagreed with the alveolar route of operation. He also considered the removal of the anterior part of the turbinate as unnecessary and liable to produce other symptoms. Irrigation through the alveolus would always tend to wash the septic contents of the antrum into the other sinuses.

Dr. J. S. WALLACE (London) thought that antral plugs should always be solid.

Dr. E. DONELAN (Glasgow) preferred the nasal to any other route of operation.

Mr. G. WILLIAM HILL (London) was disappointed with the line the discussion had taken; he did not himself consider that the dental cause of antral disease was in any degree as common as nasal infection. He was familiar with some degree of hyperostosis of the alveolar wall due to dento-alveolar abscess but only rarely perforation.

Mr. F. J. BENNETT (London) said that advancing skill and technical knowledge required the dentist to work with the nasal surgeon. John Hunter had pointed out that the antral cavity was developed in relation with, and probably determined by, the roots of the teeth. Was the thinning of the bone shown by Mr. Underwood related at all to the age and perhaps decomposition of the skull? Antral septa were largely related to the developing teeth and were the site of the posterior wall of the antral cavity at the moment of developing of a given tooth and persisted owing to deficient absorption.

Dr J. DUNDAS GRANT (London) regretted that it had not been possible to have a joint meeting of the Sections to discuss the question. He referred to the drainage tubes which were often retained so long that they acted as foreign bodies and said that the removal of such an apparatus was often followed by the cessation of a long continued suppuration. If clinical distinction could be made between the rhinogenic and odontogenic origin, the treatment adopted would follow the pathological distinction. He was glad that the internasal operation was more in favour; he would, however, never perform this operation in children before the second teeth were erupted.

Dr. W. S. SYME (Glasgow) asked if teeth were often found to be present as foreign bodies in the antrum at the time of operation.

Mr. TILLEY and Mr. UNDERWOOD replied.

ELECTRICAL MEDICINE.

WEDNESDAY, JULY 29TH.

The section was opened at 10 A.M. by the PRESIDENT (Dr. E. REGINALD MORTON, London) who gave an address from the chair

On the Value of Tele-Radiography in Diagnosis,

in the course of which he said: "The essential principle on which this modification of x ray technique is based is that, other things being the same, the further away the source of light the sharper, clearer, and less distorted is the shadow cast by an opaque object. Heretofore the distance the x ray tube could be removed from the plate has been very limited—more often under 20 inches than over—but with the improvement in apparatus that has taken place during the past year or two it is now possible to obtain excellent radiographs with the tube at a distance of 2 metres (6 feet 8 inches) and these with an average exposure of one second or slightly less. The apparatus has to conform to certain very definite requirements. In the first place, a practically unlimited supply of continuous current is necessary at a pressure of not less than 100 volts; as the primary of the coil has to pass a current of from 80 to 100 ampères a thoroughly efficient switch of the double-pole type must be used. As no ordinary interrupter can pass such massive currents a multi-anode electrolytic break has been found most suitable. This has three or four anodes and each one is first separately adjusted to a certain current—say 25 ampères—the other anodes being cut out for the time. The three or four anodes are then joined in parallel when each passes the current to which it has been adjusted and, having been tuned to each other, so to speak, act in synchronism. The strain on the x ray tube is a very severe one and every possible means must be taken to make the exposure short. This is very materially brought about by the use of an intensifying screen, and if films instead of plates are employed two such screens may be used, one on either side of the film." A number of lantern slides were shown by Dr. Morton which had been prepared from some of his negatives. In these it was easy to see the value of having the tube at a considerable distance from the plate and incidentally that of making the exposure as short as possible. In conclusion, Dr. Morton pointed out as an evidence of the rapidity with which changes take place in a new science like radiography that while at the last annual meeting the orthodiagraph was described most ably by Dr. H. Walsham and Dr. J. F. Halls Dally, and accepted as the last word in accurate x ray delineation of the heart and great vessels, now but 12 months later tele-radiography had quite taken its place as possessing practically equal accuracy, a freedom from the personal equation, less danger to the operator, a great saving in time, and the resulting radiograph of greater value and richness in detail than could be obtained in any orthodiagram.

Dr. CHARLES LESTER LEONARD (Philadelphia) then read a paper on

The Value of Instantaneous Exposures in the Diagnosis of Pulmonary Tuberculosis

and incidentally opened a discussion on the value of the x rays as an aid to the diagnosis of pulmonary conditions generally. While not claiming too much for the Roentgen method he was careful to point out that by means of instantaneous radiography it was possible to bring out clearly enlarged bronchial glands and areas of infiltration about the roots of the lungs which were out of the reach of the ordinary method of physical examination. A number of lantern slides were shown to illustrate the various points raised in the course of his paper. Dr. Leonard also gave a description of his apparatus which made such rapid exposures possible.—A lively discussion followed.

Dr. G. H. ORTON (London) drew attention to the small size of the heart and consequent enfeeblement of the circulation frequently observed in patients with a phthisical tendency. It was also more vertically placed. These points were much more easily and accurately ascertained by the x rays than by any other method.

Dr. J. F. HALLS DALLY (London) emphasised the importance of studying the diaphragmatic movements, and while agreeing that tele-radiography was the easiest method he was of the opinion that the orthodiagraph was more accurate and

that the personal equation in regard to the use of the latter was not so serious as had been made out.

Dr. J. E. SQUIRE (London), speaking as a physician, said he welcomed the x rays as an aid to diagnosis, but he thought that radiographers should remember that when drawing comparisons between this method and ordinary methods of physical examination very often it was the case of the x ray expert against one who was not an expert in ordinary physical diagnosis. That degree of skill in the latter which entitled its possessor to be called an expert seldom, if ever, was to be found, in his opinion, among the class known as general practitioners. This could only be attained by those who had opportunities for examining great numbers of chest cases over a period of many years.

Mr. C. THURSTAN HOLLAND (Liverpool) did not consider that restricted movement of the diaphragm was a necessary accompaniment of all cases of incipient phthisis.

Dr. A. STANLEY GREEN (Lincoln) said that the value of the study of the diaphragmatic movements depended very largely on the thoroughness with which it was carried out.

Mr. THURSTAN HOLLAND claimed great advantages for the use of a square or rectangular diaphragm the length and breadth of which could be altered at will and without taking the eyes off the screen.

The PRESIDENT congratulated Dr. Leonard on the excellent results which he had obtained and expressed it as his opinion that the future of pulmonary, if not all, radiography would be found to lie with the instantaneous exposures. He had been much impressed with what he saw when in America two years ago and he had seen no reason since to alter a similar opinion then expressed. There was no doubt that the apparatus described and used by Dr. Leonard was a great advance on what was in general use at present and that it would do much to further the progress of instantaneous radiography. The President also wished to express his thanks to Dr. Squire for taking part in the discussion. It was only by receiving and acting upon criticisms from experts in physical diagnosis such as himself that radiographers could hope to make any real advance in this direction. He could not quite agree with Dr. Thurstan Holland that the ordinary methods of physical examination were effete and obsolete but considered that all methods should be employed in doubtful cases and that it would be found that the x-ray method would come in chiefly as a corroboration of what was suspected by other means. With greater improvement in apparatus and greater skill on the part of radiographers there was every reason to believe that they had by no means reached the limit of their field of usefulness in this direction. He agreed with Dr. Thurstan Holland as to the value of the diaphragm described by him, but considered it important to show as much as possible in a radiograph for several reasons, and pointed out the value of tele-radiography, which gave a radiograph of the whole chest with abundant detail and without the use of a diaphragm of any kind.

Dr. ORTON read a paper on

Some Fallacies in the X Ray Diagnosis of Renal and Ureteral Calculi and How these may possibly be Avoided.

He first indicated some sources of error, such as fæcal masses (especially if the patient had been taking even small doses of bismuth), calcified glands, phleboliths, &c. In his opinion proper attention was not always given to the preparation of the patient, for though fæcal masses were not likely to deceive anyone accustomed to the interpretation of x ray negatives such a mass might easily mask a calculus. Patients should always take an aperient the night before, followed by a saline in the morning, or even an enema. The patient should further take a very light breakfast before the x ray examination. Every means should be taken to restrain the respiratory movements. He advised the use of low tubes in all cases as giving a greater differentiation of shadows, and the exposure should not be unduly prolonged—in fact, if this could always be done within the period the patient could hold the breath so much the better. The position in which renal calculi might occur extended from well up above the margin of the ribs to an inch or more below the iliac crest. The whole of the urinary tract should be always examined and a second plate should be made to eliminate any possible source of error due to the plate itself. Particularly difficult at times was the positive diagnosis of certain small and rounded shadows in the neighbourhood of the ureter. In many cases it was necessary to pass a ureteral bougie, specially prepared so as to be opaque to x rays, in order to find if the suspected shadow was really a ureteral calculus. In very stout subjects a negative diagnosis must not be taken as conclusive evidence of the absence of stone.

Dr. LEONARD referred to the methods employed by himself and also to the difficulties attendant upon the passing of the ureteral bougie when such was necessary to ascertain the position of the body casting the shadow.

Mr. THURSTAN HOLLAND and Dr. A. HOWARD PIRIE (London) also described their own methods of procedure with a view of eliminating the errors referred to by the reader of the paper.

The PRESIDENT emphasised the necessity for always making two plates, especially of the renal region. His own practice was to take one with the anode directly over the right kidney and the other with the anode over the left kidney. In this way he obtained a pair of plates which were a check on each other as regards inherent faults and also could be examined together in the stereoscope. While agreeing with Dr. Thurstan Holland as to the limited usefulness of the stereoscopic method in renal work, it was at times a distinct advantage, especially if x ray opaque ureteral bougies had been placed in position. He (the President) considered that in this, as in the radiography of all the thicker parts of the body, the x ray tube remained the greatest difficulty of all. They were still looking for some reliable means of testing the radiographic power of a tube from time to time or at any moment and he cited instances from his experience which went to show that the supposed relationship between the resistance of the tube (as measured by the alternate spark-gap) and its penetration rested on the most shadowy basis. The penetration seemed to depend on the power of the coil —i.e., voltage—and also on the current passing through it; that was to say, a current of one milliampère through any given tube from an 8-inch coil had less radiographic power and penetration than when the same current was supplied to the same tube by an 18-inch coil. Further, while using the large coil the penetrative power of the rays was less with one milliampère than if five, ten, or 20 milliampères were passed through. If penetration depended upon resistance this would not be the case—there would be an increase in the *quantity* of light, not in penetrative power, when the current through the tube was increased.

Dr. ORTON, in replying, said that he had experienced the same difficulties regarding x ray tubes which had been mentioned by the President.

INDUSTRIAL DISEASES.

FRIDAY, JULY 31ST.

At this day's proceedings the chair was occupied by Dr. S. KING ALCOCK (Burslem), one of the Vice-presidents of the section.

Dr. ALEXANDER SCOTT (Glasgow) opened the proceedings with a paper in which he advocated the

Compulsory Notification of all Industrial Diseases,

whether arising from the nature of the employment or from accident, and whether they were scheduled in the Workmen's Compensation Act or not. Dr. Scott said that all the cases which he would describe had come under his own observation. He had seen many instances of lead poisoning, of carbon-monoxide intoxication, of neuroses in railway servants and in drivers of engines and electric tramcars, of heart disease from sudden strain, and of diseases due to dust in which timely notification might have led to recovery, and would certainly have effected great saving not only in wages but also in compensation. Carbon monoxide he regarded as especially important, the dangerous atmospheric percentage of the gas being only 0·04; poisoning was also very rapid, and the acquired immunity which had been shown by experiment to be possible in the lower animals was never seen in man. Long exposure to small quantities of this gas in no way lessened a workman's liability to sudden collapse from its effects, when the proportion was greater than that almost infinitesimal amount. Railway accidents would appeal to them all as a matter of very grave importance. Inquiries were being held daily; signalmen and drivers were frequently arrested, and severe punitive

measures were meted out, but the real causes of many accidents were not to be found in the default of the men, but in the condition of their nervous systems. Neuroses which were set up by prolonged tension—by over anxiety with consequent inhibition of voluntary action and control—were in his experience not uncommon; and accidents which were attributed to negligence and carelessness on the part of a driver were often caused by the physical inability of the man to apply his own mental brakes. These diseases were directly due to occupation, and, on principles of fairness, might well be considered worthy of inclusion in the schedule. Heart affections also were very important; but here the difficulty was to obtain exact and trustworthy evidence of the condition previously to the inevitable catastrophe. Ruptures of the cardiac muscle or valves by strain were properly liable to compensation; and he would take this opportunity to point out that these injuries, if treated in time, might certainly be cured; but that unless the workman was prevented from carrying on his duties in all probability they would prove fatal. It would thus be seen that frequent general and special examination, by inspection, by stethoscope, and by ophthalmoscope, was of vital importance both to the individual and to the employer. The Departmental Commission had considered no subject more carefully than that of fibrosis of the lung due to dust, but that disease was not included in the schedule. Yet in a sanatorium with which he was connected 40 per cent. of the beds were occupied by cases of miner's phthisis, and in 33 per cent. tubercle bacilli could not be found. Notification was essential not so much because it might be important if questions of compensation were raised but because it would give early intimation of illness, prevent accidents, and enable sufferers to obtain timely treatment. Not the least of its advantages would be that it would impress habits of cleanliness and the value of sanitary methods on a population which much required instruction.

Dr. ALCOCK said that the great difficulty was obviously the question whether men who were naturally unhealthy, who exhibited a tendency to some particular disease, and who would probably have acquired it in any case should be entitled to the same compensation as those who were sound when they commenced work. It was so frequently the case now that claims were made, and in many instances supported by judges, when it was apparent to those who had scientific knowledge that they could scarcely be justified, that he thought if Dr. Scott's views were adopted employers would be almost obliged to resort to retaliation. Certainly they would insist on a rigorous examination and would exclude everybody from employment except those who were absolutely sound.

Mr. W. F. DEARDEN (Stretford) said that the Commission had been careful to schedule no illnesses except those which were *proved* to be due to occupation. The private practitioner had a very important function in respect of these diseases; he himself first came across aniline poisoning in private work, but as he happened also to be a certifying surgeon he was able to follow it up to its origin in the factory, and he was afterwards in a position to convince the Commission that that intoxication ought to be scheduled. Poisoning by paranitraniline also was not infrequent in his district and its position required consideration; here the symptoms were due not to aniline but to the nitrous fumes which were given off in the process of its manufacture.

Dr. A. MECHAN (Glasgow) said that if Dr. Scott's views were adopted he would like to ask where were notification and compensation to end? It was always held by courts of justice that whether a man was unhealthy or not, if his illness arose while he was engaged at his employment he was entitled to compensation. Suppose a workman died from heart disease or from cerebral hæmorrhage his representatives might get compensation on no other ground than that when these accidents took place he was in employment. Of recent years the total amount of compensation paid had gone up by leaps and bounds; in 11 years it had increased 200 per cent., and although no one was more anxious than himself that justice should be done as between employer and employed, he considered that even at present masters had a real grievance. What the state of affairs would be if Dr. Scott's suggestions were adopted he did not care to contemplate.

Dr. T. M. LEGGE (London) said that Dr. Scott was generally ahead of his time and pointed to goals which possibly we ought to strive to attain but which we had to be content to regard as impracticable. Perhaps Dr. Scott also would be satisfied for the present with having called attention to this subject. Might he (Dr. Legge) venture to hint, too, that it seemed to him that Dr. Scott was better at destructive criticism than at suggesting practical remedies. In this case the theory was excellent but application would be difficult, if not impossible. The question of notification was the first obstacle. To whom was it to be made and on whom was it proposed to make it a legal obligation? He thought occupiers at least should be relieved from any future responsibility in this matter; their burden was more than sufficiently heavy already. The present custom was that industrial diseases were notifiable to the chief inspector of factories and infectious diseases to the medical officer of health; probably that was the best arrangement that could be made. With regard to carbon monoxide poisoning, it was always due to an escape and when it occurred it had to be reported by the occupier as an accident; intoxication by the gas was, therefore, not scheduled because compensation could be obtained on that ground. He was doubtful whether in such instances compulsory notification would ever be of real use. After all, their object was prevention, and the present system of notification was sufficient to give all the information which was necessary to insure action being taken. Probably, however, when the day of universal insurance and compensation for sickness and accidents had come Dr. Scott's interesting proposals might be found possible of application.

Dr. SCOTT said that he advocated examination both in the interest of the individual and of the employer. Information as to the incipient signs of disease was important to the latter and of vital consequence to the former. If his ideas were carried out, compensation would be decreased, not increased. That, indeed, was one of the main grounds upon which he based his contentions. Dr. Legge had referred to a more serious difficulty and the responsibility of notification no doubt was a problem for which it was hard but not impossible to find a solution. In the meantime notification should be made first of all to the patient himself and then a friendly word of advice to the employer might enable him to let the worker have a change of occupation while it was yet time. Early knowledge of disease such as would be secured by the measures which he proposed could not come too soon to either party, and in many cases he believed it would result in the saving of life.

Mr. DEARDEN read a paper by Professor T. OLIVER (Newcastle-on-Tyne) on

Tar and Gas-workers' Epithelioma,

in which several cases of the affection recently observed by him were described. Professor Oliver pointed out that unconsumed coal-dust did not set up the characteristic irritation of the skin, and especially of the scrotum, which was so frequently associated with carbon; coal-miners, for instance, were not liable to occupation epithelioma; but it was otherwise when they came to look into the diseases prevalent among those who worked with the products of the combustion of coal. Chimney-sweeps, as was well known, were very liable to malignant disease caused by soot, and he had recently observed among those who worked with other by-products a similar affection. Thus, men who were engaged in making grease from coal residue frequently suffered from warty growths on the hands and forearms which were true papillomata and directly due to their occupation. These excrescences always had black heads and a definite and characteristic appearance, their section being typical of epithelioma, and the glands in the axilla afterwards becoming cancerous. Later, nodules developed under the skin and irregular, deep, malignant ulcers formed on the arms and forearms. In many cases the bases of these sores involved the bones, causing fracture and necessitating amputation. Tar-macadam and asphalt workers also suffered from scrotal epithelioma which was in every respect similar to the cancer of chimney-sweeps and, like it, could be removed in the earlier stages without much likelihood of return, provided that the patient did not continue to expose himself to the exciting cause. The origin of the condition was in the follicles, which became blocked by combustion products, the immediate result being irritation and hyperkeratosis. Ultimately, this proliferation of new epithelium and tissue assumed a thoroughly malignant

character. The remedy was, of course, to be found in protection and cleanliness.

Dr. LEGGE introduced to the section Signor Luigi Carozzi of Milan, secretary of an international committee which had been formed to further the study of industrial diseases. On this committee, the work of which was to be carried out on purely humanitarian and non-political principles, every industrial country would so far as possible be represented, and Dr. Oliver and himself had agreed to undertake to the best of their ability the representation of Great Britain.

Signor CAROZZI then explained the objects of the committee and the methods of work which it proposed to follow. By the generosity of a wealthy citizen of Milan it would be able to open in that city next year a laboratory and clinique of 80 beds which would be entirely devoted to the treatment and systematic study of industrial disease. A bulletin containing reports of the work of the institution would be published regularly in French; researches carried out in Italy and other countries on the subjects in which they were interested would be carefully followed and new publications, when advisable, would be epitomised and reviewed. English physicians and surgeons interested in industrial disease, he need not say, would be heartily welcomed if they were able to visit Milan and to see what was being done there.

Dr. ALCOCK said that he knew that he expressed the feeling of the section in extending cordial good wishes to Signor Carozzi and the committee of the International Society. As was natural, Great Britain had been the pioneers and the first teachers of the importance of this branch of science, but when they heard of schemes like that of Signor Carozzi in Italy and of the progress which was being made in Germany, in Japan, and in other countries it was evident that younger centres of industry might be able to better the instruction.

LARYNGOLOGY, OTOLOGY, AND RHINOLOGY.

WEDNESDAY, JULY 29TH.

The PRESIDENT (Mr. GEORGE WILKINSON, Sheffield) announced a discussion on

The Treatment of Chronic Inflammatory Conditions of the Pharynx.

This was opened by Dr. PETER MCBRIDE (Edinburgh) and Dr. JAMES BARRY BALL (London).

Dr. MCBRIDE considered the conditions affecting the pharynx itself and touched upon such points as were likely to give rise to discussion, avoiding as far as possible reference to well-known facts. Taking first chronic inflammation and hypertrophy of the tonsils, he considered that removal of hypertrophied tonsils was not called for when the chest and general physique were well developed and there were no enlarged cervical glands. When surgical interference was called for the electric cautery, the small knife and punch for cutting out the crypts, the guillotine, the bistoury and scissors, and enucleation had all been commended by various operators. Moritz Schmidt had advised the use of the cautery in all ages. Escat preferred the guillotine for children under 12 years of age. Dr. McBride considered that the bistoury and scissors should not be used. As regards the question of partial or entire removal of the tonsils, he reminded his listeners that the tonsils were a means of defence. For the arrest of hæmorrhage he caused the patient to stand up, on the principle that approaching syncope was a good hæmostatic. A vessel behind the anterior pillar of the fauces was one that might give rise to troublesome hæmorrhage. Keratosis called for little treatment. Passing to ulcerative conditions, lacunar ulceration of the tonsils as described by Moore and Mendil, although common in France, was rarely seen in this country. The treatment consisted of scraping the ulcers. Chronic pharyngitis Dr. McBride divided into three groups: (1) typical granular pharyngitis; (2) pharyngitis often associated with granules and enlargement of the lateral folds, but in which the chief features were congestion and irritability; and (3) cases in which there might be some general congestion and in which the patient complained of frequent colds. The indications for treatment were both general as well as local. Local treatment was usually necessary. Diet and *régime* required great attention, more particularly the avoidance of excess in alcohol and tobacco. A pipe or a cigar at times were better tolerated than cigarettes. Nasal stenosis was sometimes a cause. The obstruction, if marked, must be removed; if slight, or due to alar collapse, it might be treated by exercises. Dr. McBride concluded with reference to the methods of preventing catching cold. He referred to the hardening processes as recommended by Moritz Schmidt. He emphasised the importance of prescribing exercises and of not confining these to the breathing muscles alone. Probably the best form was that known as physical culture, because the amount could be made to suit each case. This was valuable both in pharyngitis occurring in those who eat and drink too much and in preventing catching cold in those who are specially prone to do so. It helped also in relieving alar collapse.

Dr. BARRY BALL'S paper dealt chiefly with the naso-pharynx. The conditions might be divided into chronic naso-pharyngitis and hypertrophied pharyngeal tonsil or adenoids. Chronic naso-pharyngitis might be general or localised in recesses of the adenoid tissue which had not undergone complete retrogression. The causative treatment was most important in many cases. Speaking of nasal washes and direct local applications, Dr. Ball preferred the rubber ball syringe. The paraffin and menthol spray was useful after cleansing the naso-pharynx. The electric cautery should never be used in that region. Passing to a consideration of the hypertrophied pharyngeal tonsil or adenoids, he emphasised the principle that they were not to be removed simply owing to size, and also that when their removal was necessary no medical treatment, local or general, had any effect, nor had breathing exercises on the hypertrophied tissue. The results of operation were not always completely satisfactory, and even after the removal of the growth mouth breathing and the adenoid facies sometimes persisted.

A paper communicated by Dr. J. HARDIE NEIL (New Zealand) upon

Some Points in the Anatomy and Surgery of the Tonsils

was read in abstract by one of the honorary secretaries of the section. Dr. Neil referred to investigations, into the possibility of the tonsils allowing general infection of the body, having made apparent the necessity of insuring as nearly as possible a complete removal of the tonsils when indications exist necessitating such a course. He then passed on to discuss the plica triangularis and photographs were exhibited showing that it commenced as a thin fold where it was attached to the posterior pillar below where the latter joined the anterior pillar. It then arched over the upper aspect of the tonsil, and after being adherent to the anterior pillar passed downwards in contact with the anterior inferior surface of the tonsil, approaching the posterior pillar, and was lost beside it. The recognition of this upper portion of the plica was most important and a proper inspection would show its presence at all ages. The separation of the plica from the capsule was a necessary step in the removal or enucleation of the tonsil. A photograph exhibited showed that the plica at birth was quite distinct from the faucial pillars and was only attached to the tonsillar tissue by a bridge. This bridge or band passed back across the tonsillar surface from the middle of the plica's free margin and divided the tonsil into two. Dr. Neil gave it the name of hilum. The capsule of the tonsil was then described. The crypts above the hilum ran downwards and outwards—that is, towards the capsule—and obviously their drainage could only be the outcome of overflow and the squeezing of swallowing. Those below the hilum ran downwards and inwards away from the capsule—that is, they drained by gravitation into the pharynx. This was one of the reasons why the upper part of the tonsil was so important as a disease centre and the lower part so innocuous. Some of the supra-hilar crypts were fairly constant, and one in the anterior portion of the upper half was particularly so. It was called by some the supra-tonsillar fossa. Dr. Neil's contention was that the supra-tonsillar fossa was simply the large crypt that had been called the tonsillar sinus. The capsule was applied directly to the middle constrictor and surrounding parts, and there was no physiological separation. Dr. Neil discussed the pathological anatomy of the so-called peritonsillar abscess. The usual description, he said, was based on the idea of the supra-tonsillar fossa being a cavity or sinus in connexion with an opening above the tonsil proper. The German writers were not so dogmatic as to the locality of

the pus, preferring to say that the abscess lay in the tonsillar substance and that the neighbouring parts showed signs of cellulitis from contiguity of structures. The impression gathered from a perusal of English text-books was that the infection passed through the tonsillar crypts up to the alleged tonsillar fossa, thence into the peritonsillar tissues, with the subsequent formation of an abscess in the latter tissues, the tonsil escaping. The paper suggested that when a sufficiently virulent infection took place and drainage through the mouth of the sinus or crypts had failed, probably through the plica and hilum blocking the orifices or adhesions acting similarly, an acute abscess formed in the upper and generally anterior half of the gland. The whole tonsil, of course, underwent an inflammatory enlargement at the same time. The lower half enlarging, bulged out into the fauces and backwards, pushing the posterior pillar back towards the pharyngeal wall, thus giving the appearance of great depth from the anterior pillar to the posterior pharyngeal wall; of the upper half of the tonsil the posterior portion enlarged, came forward, and assisted in blocking still further the possible drainage by the sinus orifice. The abscess cavity was in acute cases generally right up against the capsule at the anterior upper pole, and had to take the direction of least resistance—that is, anteriorly—and it bulged out against the anterior pillar. Dr. Neil described the way in which he removed tonsils. In conclusion he stated that the guillotine was suitable for tonsils that bulged into the fauces and seemed to have pedicles, but for cases with enlarged glands in the neck or where there was a history of previous sore-throats or middle-ear trouble there was, in his opinion, only one method that was compatible with due regard for the patient's future welfare, and that was removal of all the tonsillar tissue but that part lying between the sinus and the anterior pillar.

Mr. T. MARK HOVELL (London) emphasised the importance of paying attention to the posterior ends of the inferior turbinal bodies as a cause of keeping up the nasal obstruction after the adenoids had been removed. He pointed out that owing to these bodies containing erectile tissue they varied in size from day to day, and he advised that at the time of the adenoid operation the snare should be passed through the nose and any enlargement of the posterior ends of the inferior turbinate bodies should be removed. Should the ends not be sufficiently enlarged to call for removal no harm would have been done, whereas if the enlarged ends were allowed to remain the beneficial results of the operation would be less.

Dr. R. H. SCANES SPICER (London) dwelt upon the use of breathing exercises in the treatment of chronic inflammatory condition of the pharynx, and considered that when they were not properly carried out they induced congestion.

Dr. J. DUNDAS GRANT (London) pointed out that when the uvula was the source of trouble its removal was not always and immediately followed by relief of the cough. Exercises he considered were at times injurious, especially in children with stuffy noses.

Dr. P. WATSON WILLIAMS (Bristol) was opposed to the posterior ends of the inferior turbinate bodies being systematically removed, and spoke of the selective affinity of the pharynx for toxic substances which disturbed the digestion.

Dr. ATWOOD THORNE (London) was also opposed to the systematic removal of the posterior ends of the inferior turbinate bodies. Tobacco, he considered, was not a cause of pharyngitis and he referred to a paper which he thought had exploded the fallacy.

Dr. J. A. KNOWLES RENSHAW (Manchester) was in favour of more nasal treatment, also of the application of ointments to the inside of the nose.

Mr. T. G. OUSTON (Newcastle-on-Tyne) spoke on post-nasal catarrh and considered that it did not appear before the age of ten years.

Dr. ANDREW WYLIE (London) considered that paresis of the soft palate following an ordinary tonsillitis was a cause of pharyngitis.

Dr. N. C. HARING (Manchester) spoke of the value of high altitudes in the treatment of these cases and also of cases presenting the adenoid facies without the adenoids.

Dr. W. JOBSON HORNE (London) expressed his gratitude for having been born in the pre-adenoid days and also for having had some adenoid tissue in his naso-pharynx. He cited a research which showed that the adenoids, like the tonsils, were a first line of defence and he agreed with Dr. McBride and also with Dr. Ball that the structures should not be removed solely because they were present if they gave rise to no symptoms. In a class of cases commonly met with in adults, to which Dr. Ball had referred and in which a chronic naso-pharyngitis was kept up by secretions retained in a partially atrophied adenoid growth, it was most important that the atrophied portions should be removed. Such tissue had undergone repeated attacks of inflammation and had ceased to be of service as a means of defence to the organism; on the contrary, it had become a nidus for bacteria. Whilst in a child a corresponding amount of adenoid tissue might usefully be left, at times it called for a nicety of judgment to decide when an operation was necessary.

The PRESIDENT of the section briefly summed up the debate and the openers replied.

Dr. MCBRIDE said that even a small amount of adenoids was frequently material and called for removal owing to the position of the growth. Breathing exercises, he thought, were best left to common sense. Tobacco, he considered, in excess did tend to produce pharyngitis, and that pharyngitis was cured by stopping the tobacco. Paresis of the soft palate he did not regard as a cause of pharyngitis.

Dr. BALL was in favour of the use of the guillotine in all cases. The anterior pillar of the fauces when adherent to the tonsils should be separated. He also was sceptical of the results of breathing exercises. He reminded the younger men that there were unsatisfactory cases, and if the cases did not go back to them they must not conclude that they did not exist. He held that tobacco was responsible for pharyngitis.

Dr. ANDREW WYLIE read a paper on

A Case of Cervical Tumour Simulating Enlarged Gland Associated with Laryngeal Paralysis.

Upon removal the tumour was found to be a typical endothelioma, closely connected with the carotid artery. After removal the laryngeal paralysis recovered, the carotid artery became eroded, and the patient died suddenly from hæmorrhage. Dr. Wylie referred to similar cases.

The PRESIDENT of the section referred to the difficulty there was at times in getting these tumours away from the carotid sheath.

Dr. DUNDAS GRANT read a short paper

On the Use of Bougies for Dilating the Infundibulum of the Nose.

Mr. HUNTER F. TOD (London) pointed out the advantage of having these instruments made of soft metal so that they could be curved to meet the requirements of any particular case.

Dr. DUNDAS GRANT concurred, and added that conical tips would be a further improvement.

Dr. A. BROWN KELLY (Glasgow) read a paper

On Some Experiences in Direct Examination of the Larynx, the Trachea, and the Œsophagus.

For illumination he preferred the ordinary head lamp and the patient in the recumbent position and under chloroform. Direct laryngoscopy he had found of great service in differentiating the various causes of stridor in infants, and he referred to a case of subglottic swelling and to another in which the lumen of the trachea was reduced laterally by the thymus gland. Stridor in other cases was produced not only by the aryepiglottic folds but also by the epiglottis and the arytenoid tissue being projected over the glottis. Tracheoscopy and bronchoscopy he had found useful in the removal of foreign bodies. Also in a case of stricture of the trachea causing obstruction after tracheotomy, the ring-shaped stricture he was able to notch and dilate. Œsophagoscopy he had availed himself of not only in the removal of foreign bodies but also in the treatment of cicatricial stricture following acid poisoning. Speaking of dentures as a form of foreign body one was more liable to be called upon to remove, he referred to the importance of obtaining a sketch of the denture from the patient prior to proceeding to its removal through the œsophageal tube.

Mr. E. B. WAGGETT (London) gave a demonstration on the Methods of Direct Laryngoscopy, Bronchoscopy, and Œsophagoscopy.

Mr. THOMAS GUTHRIE (Liverpool) demonstrated Preparations showing Development of the Middle Ear.

OPHTHALMOLOGY.

THURSDAY, JULY 30TH.

Professor AXENFELD (Freiburg) opened a discussion on

Serum-Therapy in Diseases of the Eye.

He said that in the comparatively recent time during which this most suggestive mode of treatment had been so greatly extended, the most adverse views had been arrived at by those who practised ophthalmology. There was no one who did not recognise the immeasurable value of the great initial discovery in vaccine treatment which had been made in this country by the great Jenner and which had been naturalised in every civilised country. Further, the discovery of the utility of antidiphtheritic toxin by Behring had placed that mode of medication on a firm basis so far as general medicine was concerned. In eye work there were signs at present of two widely sundered opinions on serum-therapy. On the one hand were men who showed what might not be unfairly described as over-sanguine expectations of the benefit to be obtained; and on the other hand were those who viewed it, partly because of the over enthusiasm of the one party, with a deep and exaggerated scepticism. He did not propose to enter into any theories of immunity. He proposed to examine the use, the successes, the failures, and the prospects for the future of such modes of treatment that were known to us now. In the treatment of the infective diseases of the eyelids the same rules held good for serum-therapy, if it were decided to adopt it, as in the case of any lesion of the skin in general. It had proved of service to employ staphylococcic vaccine in obstinate blepharitis and in the repeated formations of hordeola. These vaccines should be prepared from the infective organism present in each case, which could readily be done, and the vaccine injected subcutaneously. The usage had proved helpful, even as may the Soberheim serum in the rarely occurring cases of anthrax. It was, as a rule, not worth while to employ serum-therapy in treating infective diseases of the lacrymal sac, partly because we already possessed simple and effective methods of treatment, and partly because the effect of the immunisation was too transient to secure us against a chronic infection of that mucosa, one which was so prone to be disastrous to the integrity of the globe. In cases of membranous conjunctivitis the therapeutic effects of Behring-Roux serum was generally recognised. But it was less effective in cases of corneal complications in diphtheria, since these were for the most part due to mixed infections. It was also uncertain whether post-diphtheritic paralysis of the accommodation was influenced by the serum. Streptococcic diphtheria of the conjunctiva could be influenced to a certain degree by the commercial streptococcic serum, but this might be admitted with much less certainty than in infections from the Löffler's diphtheria bacillus treated by the exhibition of Behring's serum. Roemer's jequiritol serum, for counteracting excessive reaction after the exhibition of jequiritol in the treatment of obstinate pannus, had been found to be not of certain effectiveness if administered in drops to the conjunctiva; it should be given subcutaneously, since this serum, like all other sera, is more efficacious when in the lymph-stream. To avoid complications of dacryocystitis in the course of jequiritol ophthalmia he strongly recommended the injection of the serum into the lacrymal sac immediately before the use of the drug. Pneumococcic serum-therapy was not by itself adequate in the treatment of ulcus serpens, it could not in any sense take the place of the certain and well-known surgical procedures. For prophylactic purposes previously to operations on the globe in cases where there was great liability to suppuration, the preliminary administration of vaccine prepared from microbes from the patient's own eye was advisable, and the use of the commercial preparations might be adopted if these were available. No good could be expected where there existed deep wound infections of the eye, particularly where the vitreous was infected, for the capacity of these tissues for bacterial cultivation was notorious. The serum-therapy proposed by zur Nedder for sympathetic ophthalmia had not in his hands given any good results, and he did not think there was much prospect of the successful production of sera in cases of organisms that had a selective action on the human eye. Tuberculin therapy by subcutaneous injection he found often gave good results in eye work, but they were far from being sure as yet as to the optimum dosage. The subject of non-specific serum-therapy had been advocated strongly by Darier, who asserted the utility of diphtherial serum in cases which were not diphtheritic. So far he did not think that there existed any sufficient experimental proofs for such a proposition. Many experiments had been undertaken in this connexion at Freiburg with negative results. The reports of non-specific therapy by Deutschmann with yeast serum were for the same reason open to question, uncontrolled clinical observation was not enough. These matters demanded careful and extended experiment on animals, for in these alone could we eliminate the ordinary methods of surgical treatment. We must have this before we could be sure that the results were other than fortuitous.

The PRESIDENT of the section (Sir HENRY R. SWANZY, Dublin) expressed his pleasure at the wide and judicial scope of Professor Axenfeld's paper. The subject was one which he had only recently entered upon and the paper was most illuminating.

Mr. PERCIVAL J. HAY (Sheffield) said that during the time when he had been engaged in working at this subject he had been struck by the lack of critical judgment shown by those who had reported on cases in which this mode of treatment had been adopted. The results stated to have been obtained by the use of polyvalent serum were little short of marvellous, and he thought that it was too early to lay much stress upon them.

Dr. S. J. TAYLOR (Norwich) asked why, if yeast serum treatment was so efficacious, did not the habitual ingestion of certain popular forms of meat and drink immunise folk against the same infections?

Dr. GEORGE MACKAY (Edinburgh) said that he and Dr. L. C. P. Ritchie (Edinburgh) had recently been experimenting on this treatment. Dr. Ritchie discussed the bacteriological aspect of the question and particularly dealt with the necessity for specific diagnosis and specific treatment. He had recently worked at the subject of the phagocytic index, and by the variation of the phagocytic capabilities of samples of blood to several microbes he had been able to suggest what organism was likely to be the cause of the particular condition affecting the patient.

Mr. N. BISHOP HARMAN (London) said that there were two classes of cases in which some form of successful medication by bacterial products would be an inestimable boon. There were few ophthalmic surgeons who were not familiar with that most dreadful form of conjunctivitis known as membranous, and particularly that form due to infection with the streptococcus. These cases were so rapid and so destructive in their action that the most prejudiced would welcome additional means of combating them. At present he regretted to have to say that no serum-therapy had seemed to him to be of any avail. The disease was too rapid to permit of obtaining a specific serum; indeed, there was rarely time to secure a satisfactory bacteriological examination. Could he secure even a slight amelioration of these cases by the exhibition of any serum, specific or polyvalent, he would own himself a convert. The idea of a polyvalent serum seemed to him to savour of the universal remedy and to be something outside nature's provision. The other sort of cases were of a most chronic order and there was no lack of time to secure the full assistance of the bacteriologist. These were irido-cyclitis of tuberculous origin. He had compared carefully the results of the most exact and systematic treatment of these cases by tuberculin with the results obtained by the more homely treatment of good food and residence in a healthy, bracing seaside sanatorium, and there was left no doubt in his mind of the vastly superior value of the latter mode. At present he was forced to conclude that serum-therapy, so far as the eye was concerned, had not established itself.

Dr. W. B. INGLIS POLLOCK (Edinburgh) remarked on the great variation of the severity of cases of ulcus serpens. Some cases were cured by no more treatment than that afforded by rest in bed, the use of atropine, and careful bandaging.

Dr. J. HERN (Darlington) thought that there was a great future for this mode of medication. He had been greatly impressed by the utility of antidiphtheritic serum in membranous conjunctivitis.

Professor FUCHS (Vienna) said that he had not been able to undertake any experimentul research in this matter. Clinically he had not obtained any striking results by the

treatment. He felt that a careful conjunction of the experimental and clinical methods was necessary to determine their utility.

Mr. A. W. ORMOND (London) remarked on the utility of the jequiritol serum in combating the excessive reaction of jequiritol.

In reply, Professor AXENFELD said that he had to agree with Mr. Harman that they were often too late to combat successfully the severe cases of streptococcic conjunctivitis. Also sera were not of equal power. Yet he thought that he had seen benefit in some cases, though he had not succeeded in saving the cornea. As regards tuberculin treatment he inclined to a middle course in the matter of dosage, between the large dose of von Hippel and the small dose of Wright. He acknowledged that tuberculin was not so successful in cases of chronic tuberculous irido-cyclitis.

Operations for Glaucoma.

Mr. H. HERBERT (Nottingham) showed a series of cases illustrating the effects of his two operations for glaucoma by the production of "filtering cicatrices." There were eight eyes which had been operated upon for glaucoma by the wedge isolation method, and two in which tension had been relieved by a form of subconjunctival paracentesis. The communication dealt principally with the former operation. So far 63 primary glaucomas had been so treated, but only 29 had been under observation for more than six months; so that it might be held that not sufficient time had elapsed to determine the final results in the way of diminution of tension. In two cases the result was not successful and he had to repeat the operation. One eye had remained rather softer than he wished, but the vision had not suffered thereby, and a more recent report of the case indicated better tension. Although in a few cases it appeared that a fistula had been made, he was convinced that this was not the reason for the success of the majority of the operations. He thought that filtration of a permanent and steady character through the scar was demonstrated by the conjunctival œdema in the region of the scar, and by the complete relief of high tension with retention or improvement of vision. The details of the operation were described minutely. He admitted that it required more care and skill than Lagrange's operation, but thought that it was better and worth the extra trouble in the uniformity of the results. His mode of paracentesis was advantageous where the state of the eye did not allow of a more extended procedure. In both these operations he pointed out that it was absolutely essential that a very narrow-bladed knife should be used, otherwise it was quite impossible to turn the blade in the primary wound so as to produce the essential secondary wounds.

Dr. THOMSON HENDERSON (Nottingham) combated the explanation which Mr. Herbert had given as to the filtration obtained by his scars, his experience of corneal wounds went to prove that these scars were complete and permanent, and unless there were a fistula then filtration was impossible.

Major HENRY SMITH, I.M.S., said that he did not doubt that filtration could take place through such a scar whilst it was quite fresh and soft, but that ultimately it would be impermeable. He had seen much benefit arise from repeated paracentesis, especially in glaucoma subsequent to cataract extraction.

Lieutenant-Colonel F. P. MAYNARD, I.M.S. (Calcutta), complimented Mr. Herbert on the brilliance of the results which he had obtained. There was no doubt as to the success of operation, although there might be much disagreement on the matter of pathological explanation. The description of the operations he found to be complex, but once he had seen them done he found no difficulty in imitation. He thought that it was essential that no peripheral iridectomy should be made, otherwise it was not possible to determine to what measure the reduction of the tension was due.

Mr. A. L. WHITEHEAD (Leeds) had tried Lagrange's operation but was not convinced that it was any better than the usual wide iridectomy. He felt that a longer series of cases was necessary to determine wherein lay the advantages and disadvantages of possible operative measures.

Dr. GEORGE MACKAY and Mr. A. F. MACCALLAN (Cairo) commented on details of the operation.

Mr. HERBERT, in reply, said that he was satisfied as to the results though the explanation might afford room for discussion. He emphasised the necessity for a narrow knife.

FRIDAY, JULY 31ST.

Dr. F. W. EDRIDGE-GREEN (London) opened a discussion on

Colour Vision and its Anomalies.

He said that cases of colour-blindness might be divided into two classes which were quite separate and distinct from each other, though both might be present in the same person. In the first class there was light as well as colour loss. In the second class the perception of light and shade was the same as the normal-sighted, but there was a defect in the perception of colour. In the first class certain rays were either not perceived at all or very imperfectly. Colour-blind individuals belonging to the second class could be arranged in a series. At one end of this series were the normal-sighted and at the other the totally colour-blind. He had classified the colour-blind in accordance with the number of primary colours which they could see in the spectrum. If the normal-sighted were designated hexachromic those who saw five colours might be called pentachromic; those who saw four, tetrachromic; those who saw three, trichromic; those who saw two, dichromic; and the totally colour-blind, monochromic. There were many degrees included in the dichromic class. There might or might not be a neutral band and this was widest in those cases approaching most nearly to total colour-blindness. The tests which he used were three in number: (1) the lantern test; (2) the classification test; and (3) the spectrum test. In all these tests the examinee was required to know the names of the primary colours—red, yellow, green, and blue, and matching was not employed. In the spectrum test the examinee was required to point out the commencement and termination of the spectrum, to designate the various colours, and to show by a special apparatus the size of the different portions of the spectrum which appeared to him monochromatic. Dr. Edridge-Green then proceeded to demonstrate his method of testing by these various means and insisted upon the necessity of the candidate naming the colours exhibited. Any test by means of matching alone, such as Holmgren's test, permitted a cultured and observant subject who suffered from a serious defect of colour-vision to match successfully by his sense of light and shade, which was in these cases often exceedingly well developed. Besides, by matching, many normally sighted persons were rejected on account of lack of appreciation of what was wanted of them; of the Board of Trade rejections in two years 38 per cent. and 42 per cent. were subsequently found to be natural. He maintained that his method was not only easy and certain in practical work, but that alone of all the theories of colour-vision it could satisfactorily explain the variations of colour sensibility in a rational manner.

Dr. CECIL E. SHAW (Belfast) said that he had recently examined the colour vision of a number of students using both Holmgren's and Edridge-Green's tests. He had not as yet done a sufficient number for him to base any conclusions thereon, but he inclined to the view that there was not nearly so much colour defect amongst the educated classes as they were led to expect by the data in the text-books. He was much attracted to Dr. Edridge-Green's theory from a physiological standpoint and hoped to investigate it further.

Mr. C. DEVEREUX MARSHALL (London) said that after a considerable experience of conditions under which it was necessary to detect lights at sea, and a prolonged investigation of both Holmgren's and Edridge-Green's tests, he was convinced of the great superiority of the latter. By Holmgren's test it was possible to reject normally sighted persons who were stupid or unintelligent in their answers; and it was also easy for clever cultured people to circumvent the matching test, even though they were colour-blind. Neither of these things could happen with Edridge-Green's test. It was also a great mistake to suppose that educating a person up to pass Holmgren's test in any way improved his colour vision.

Mr. J. H. TOMLINSON (Egham) laid stress on the value of a projected spectrum band for the examination of colour vision as against the use of the ordinary laboratory spectroscope. With the latter it was not possible for the spectrum or portion of the spectrum exposed to view to be seen by surgeon and patient simultaneously. By the use of a large

projection band it was possible for several observers simultaneously to observe it and to point out its several parts. He thereupon proceeded to demonstrate an instrument which he had devised for this purpose, which not only fulfilled these conditions but which presented a double band of the spectrum one band above the other. The source of illumination was a powerful Nernst lamp, the filament serving as a slit. This was projected on to a translucent screen through the intermediary of three narrow mirrors by a short focus lens. The screen had shutters and the mirrors could be moved so that any portion of the three spectra could be isolated and compared, or the colours might be mixed.

The apparatus which was shown by Mr. Tomlinson exhibited great ingenuity in its planning and it completely accomplished its object.

Dr. ARTHUR GREENE (Norwich) said that he owned to being tetrachromic; he confessed to a difficulty in distinguishing greens and blues, but he felt sure that he distinguished orange, this latter he should not do according to Dr. Edridge-Green's theory.

Major W. G. PRIDMORE, I.M.S., said that for years he had examined natives of India for railway and sea work by Holmgren's method. The denunciation of that test by Dr. Edridge-Green filled him with horror at the thought of the number of ships and trains that must have gone to destruction on this account. What was required was a detection of red, green, and white, and any test must be quite simple.

Lieutenant-Colonel MAYNARD, I.M.S., said that he had had to test natives of India for colour vision from whom it would have been impossible to obtain names, so matching was necessary.

Mr. BISHOP HARMAN said that he believed that the Cambridge Expedition to New Guinea found that even the aboriginal savages of those regions recognised two colour names, the one "blood colour," the other "sea colour." Even such a rudimentary distinction made Edridge-Green's test possible.

Dr. EDRIDGE-GREEN, in reply, said that there was no difference in the incidence of colour-blindness amongst educated and uneducated persons. Culture made it possible to mask the defect in matching tests, but the defect was always exposed by the spectroscope test. It was surprising to him that any native race of India should have no colour names, no doubt it would cause some trouble to find out what names they had.

Lieutenant-Colonel MAYNARD, I.M.S., read a paper on

Seasonal Influence on Glaucoma.

He said that he had been struck with the frequency with which glaucoma appeared at certain seasons of the year in Calcutta. He worked out the incidence of the cases and found that the vast majority fell within the month of July. At this time there was no social custom, no feast, or fast that could account for it. He had investigated the weather conditions, for the seasons there were so sharply defined that an occurrence of this sort suggested a meteorological influence. Barometric pressure was very low in July but not so low as in December and January. But July was the rainy season and cloud, rain, and muggy heat were at their maximum. He thought that these conditions might be reflected in a congestive condition of the veins and in those susceptible to glaucoma determine the onset of the attack.

Mr. DEVEREUX MARSHALL said that he did not recognise any seasonal incidence for glaucoma in London.

Mr. CYRIL H. WALKER asked if the season produced any scarcity or defect in quality of food that might be a more directly determining factor.

Major PRIDMORE, I.M.S., said that if light and temperature had any influence, the former particularly, should they not expect to find that miners tended to show peculiar reactions.

Lieutenant-Colonel MAYNARD replied.

Mr. THOMSON HENDERSON gave a demonstration of his work on

The Pathology of Primary Glaucoma.

He exhibited a number of lantern slides of microscopical sections of the region of Schlemm's canal, showing the relation of the cribriform ligament, the changes in it owing to age, and also the vascular connexion of the veins of the iris and the ciliary body with Schlemm's canal and the choroidal veins. He said that in an eye with a tendency to glaucoma—i.e., with a sclerosed cribriform ligament, and therefore with diminished range of outflow—a congestive glaucomatous onset would be precipitated by any conditions which would cause (1) dilatation of the pupil, and so closure of the iris crypts, the sole remaining aqueous outlet; (2) rise in arterial pressure and secretion within the eye that could not be balanced by outflow; (3) rise in venous pressure or congestion, implying not only increased volume of venous blood in the eye but a diminished absorption already reduced to a minimum. In any rise of tension the whole uvea was affected. The amount and extent of the occlusion of the angle of the anterior chamber depended directly upon congestive œdema of the iris, which caused its base to become applied to the posterior surface of the cornea; once started the process automatically increased with each congestive attack. The success of iridectomy depended not upon reopening Schlemm's canal which had been rendered impassable, but altogether on the free opening of the iris tissue. The greater the disorganisation of the iris the less successful was iridectomy. Myotics depended for their success on the manner in which they opened wide the crypts in the anterior surface of the iris, and so promoted absorption into the iritic veins.

Professor FUCHS (Vienna) said that the venous connexions which Mr. Henderson had found for Schlemm's canal were revolutionary and required the closest investigation. He would suggest the use of coloured injecting fluids in tracing these minute vessels.

Mr. BISHOP HARMAN (London) read a note on

The Use of Glycerine as an Adjuvant to Silver Nitrate.

He commented on the numerous albuminoid preparations of silver that were now on the market; these had their vogue not because it was found they had any superiority in action to the more familiar nitrate of silver but because they caused less pain in application than did the nitrate. Pain was the one blot on the efficiency of the nitrate. He had made several experiments with a view to reduce this drawback and now presented a formula which he had had in use for over a year in a wide hospital practice. To a ½, 1, or 2 per cent. solution of silver nitrate in distilled water he added 15 per cent. of pure glycerine. This had the effect of greatly raising the specific gravity of the pigment and at the same time, by reason of the known hygroscopic powers of glycerine, increasing its penetrative action. He had used this on a very large number of patients and had tried its action on himself and his colleagues in control with the ordinary nitrate solution. The glycerinated preparation was distinctly less painful; it was, he thought, rather more effective. The salt did not lose in caustic action, for the fine pellicle of destroyed epithelium could be seen, but the pain was reduced by spreading the action of the silver over a longer period. The solution which he showed was coloured pink by the presence of a trace of rosaniline.

Mr. BISHOP HARMAN then showed a

Hollow Spear-headed Needle for Tapping the Anterior Chamber.

He said that in many cases of irido-cyclitis the collection of the aqueous under strict aseptic precautions was desirable, notably in suspected tubercle. Up to the present time they had had to be content with catching what fluid was possible after puncturing the anterior chamber with a needle. The practice was wasteful of material and it was liable to error by contamination from the conjunctiva. Messrs. Weiss had made to his design a hollow needle with a cutting spear-shaped head. (Fig. 1.) This could be attached to a syringe, the cornea pierced, and the aqueous extracted with perfect security at one operation.

Mr. BISHOP HARMAN also demonstrated

A Convenient Mode of Fastening Spectacle Frames on Infants.

He said that spectacles were a regrettable necessity for many infants of tender years in the treatment of squint. How to fix these frames on without injuring the delicate tissues of the children was a problem. Curl-sides could not be used, to succeed they must be frail, and children required strong frames else the lenses were constantly out of centre. The usual practice was to tie them on by a tape or elastic passing behind the nucha, with a result that both the nose and the tops of the ears were badly abraded and often ulcerated from pressure. He thereupon demonstrated a simple mode of tying on the glasses which, completely avoided these difficulties (Fig. 2). A piece of tape, elastic or not, was looped under the nucha, its

ends threaded through the eyes of the spectacle bows, then carried on to the vertex where they were tied together. This circuit of tape held the spectacles firmly in position yet allowed of sufficient elasticity to avoid pressure on the nose, and the bows were not dragged down on the tops of the ears. He had used the method extensively for nearly a year and found it so satisfactory that he preferred it to curl sides for children under seven years of age.

FIG. 1.

FIG. 2.

Mr. A. F. MACCALLAN (Cairo) in a paper on

Ophthalmic Conditions in the Government Schools in Egypt and their Amelioration

gave an account of his recent work in Egypt since last year. In the two travelling hospitals established by Sir Ernest Cassel 7445 new patients had been treated; of these 3175 were incurables. 2175 had absolutely blind eyes and in 326 the cause was primary glaucoma. The number of operations performed was 6794, of which 194 were for the removal of cataract. One new permanent hospital was being instituted by the Government this year, and it was hoped that yet further facilities for treatment would be given. He had carried out an extended investigation into the condition of the eyes of students in the Government schools. Trachoma was excessively prevalent. In the district of Tanah 95·67 per cent. of the pupils showed signs of active or passive trachoma. He divided the condition of the disease as seen amongst these children into four groups, from the earliest stage of the affection to the healed or scarred stage. Treatment outside hospital provision, which was totally inadequate, was not possible, partly owing to the inability of the pupils to bear the cost of private treatment where it was available, and also to the inertness of Egyptian opinion on such matters. Attempts had been made to stimulate knowledge amongst them. As regards the vision of these children, he found that over 82 per cent. had subnormal vision and in 45 per cent. vision was defective owing to opacities of one or both corneæ.

PATHOLOGY.

THURSDAY, JULY 30TH.

On the conclusion of the discussion upon Cerebro-spinal Meningitis the consideration of the second selected subject,

Regenerative and Compensatory Changes in the Liver,

was introduced by Dr. J. CRAVEN MOORE (Manchester), who reminded his audience that while some observers held that the adult liver cell had lost the power of morphological division with accompanying functional differentiation, and that the restitution of hepatic parenchyma was molecular rather than cellular, others, basing opinion on the occasional occurrence of binuclear cells and mitoses, regarded continuous cell regeneration as an important factor in liver regeneration. No matter which view was correct under physiological conditions there was abundant evidence of the proliferative capacity of the liver cells with the advent of abnormal phenomena. Therefore the question arose, Should the multi-nucleated and enlarged hepatic cell be regarded as an enhanced physiological unit or a pathological effort at cell regeneration? So far it had been impossible to trace any relationship between these morphological phenomena and the urgency of the factor that stimulated their appearance. The experimental work of Ponfick and von Meister, involving the destruction of large portions of tissue in an otherwise healthy organ, had established the possibility of compensatory hyperplasia in the adult liver which they found to consist in proliferation of hepatic cells, chiefly at the periphery of the lobules, thus producing enlargement of existing lobules, but not in the formation of new lobules. Similar compensatory changes had also been observed to occur in nature after destruction of large areas of hepatic parenchyma by such morbid conditions as gummata, hydatid cysts, &c. Pathological processes which lead to more diffuse destruction of liver cells were also accompanied by similar proliferative phenomena and then the question arose as to whether these phenomena indicated merely irritative and inflammatory activity or were initiated by the physiological needs of the organism. In passive congestion—e.g., central red atrophy—the destruction of the central cells of the lobule was commonly associated with hypertrophy of the peripheral cells, which often assumed a nodular form visible to the naked eye on section as pale areas about the zones of congestion or even as extensive tracts of pale tissue—points which were well illustrated by a number of museum specimens. In more destructive types of hepatitis—the acute yellow atrophies—the regenerative changes were of two types: firstly, those proliferations of persisting liver cells which lead to the production of adenomatous-like nodules similar to those met with in cirrhosis; and secondly, the appearance of tubules—often branched—arranged radially at the circumference of areas originally occupied by liver lobules. Many varied theories had been advanced to explain the nature and origin of these tubules; from their distribution they were probably derived from cells which originally occupied the zone of transition between the terminal bile ducts and the hepatic columns, and while the cells of which they were constructed were in most features identical with those of the small bile ducts the affinity of the cytoplasm of some of the cells for acid dyes indicated a close relationship to the hepatic cells. Their significance from the compensatory standpoint was, according to the speaker, slight.

Professor R. MUIR (Glasgow), with the assistance of an interesting series of lantern slides, demonstrated the cellular regeneration of the liver substance, compensatory hypertrophy, and the development of malignant neoplasms in connexion with the organ.

Dr. H. D. ROLLESTON (London), who followed, said that the regenerative changes which occurred when destruction of hepatic parenchyma had taken place were of importance, firstly, in producing compensation; for example, in hydatid disease of the liver, cirrhosis, and to some extent in acute yellow atrophy, though here the attempt at compensation was comparatively a failure; and secondly, in that carcinoma might supervene in these hyperplastic areas of regeneration. Dealing with the first, the two modes of regeneration should be recognised: (*a*) *Hyperplasia of the liver cells*, leading to fresh formation of liver cells, best seen in cases of extensive destruction of part of the liver by a hydatid cyst; when the proliferating liver cells were healthy and their activity unimpaired by toxic or infective factors the process of compensation was satisfactorily attained; the same phenomena were observed in portal cirrhosis. (*b*) *Pseudo-bile canaliculi*, with regard to which method of regeneration there was much doubt both as to the origin of the structures (whether from hepatic or duct epithelium) and as to the value of the process as a compensatory mechanism. He was reluctant to abandon the view that pseudo-bile canaliculi were derived from liver cells. They were produced when the conditions for proliferation were unfavourable—e.g., in cirrhosis, at the margins of the lobules where interstitial changes were active, and in acute atrophy. Surely it was reasonable to suppose that under unfavourable conditions the proliferation of the hepatic cells reverted to a more embryonic type, a view which would explain the comparative infrequency with which extensive proliferation of liver cells with the formation of nodules of undoubted liver cells on the one hand and considerable new formation of so-called new bile-ducts on the other hand were found associated. The power of these pseudo-bile canaliculi to form new liver cells, if, indeed, such existed, was undoubtedly small, and the question then arose whether those regenerative changes were directed to effect some compensatory process different from that brought about by the ordinary liver cells. The appearances presented after some staining methods suggested extreme activity and rendered it conceivable

that they were directed to meet some abnormal need in the excretion or in the antagonism to poisons. Dealing with the second aspect of his subject, the occurrence of carcinoma as the result of these regenerative processes was now well recognised. In cirrhosis, areas of hyperplasia of the liver cells and adenomas were common, but carcinoma was relatively rare and he would draw a line—artificial though it might sometimes be—between innocent proliferation and the occurrence of carcinoma; and he could not but feel that the microscopical differences between multiple adenoma in cirrhosis and carcinoma justified such a distinction and that the former could hardly be called, as Professor Muir had denominated them, "potentially malignant from the outset." Carcinoma might be derived from the proliferation of easily recognisable liver cells or from the pseudo-bile canaliculi, but he regarded pseudo-biliary carcinoma as that form of carcinoma supervening in a cirrhotic liver, and it would be interesting to know whether primary carcinoma of this type had ever been seen in cases of prolonged acute yellow atrophy.

Dr. H. M. TURNBULL (London) and Dr. WORTHINGTON (London) then showed an extensive series of lantern slides illustrating the recent paper in the London Hospital Archives on the subject under discussion, upon which were demonstrated the changes which accompanied the regeneration of liver tissue.

Dr. LINDSAY S. MILNE (Edinburgh), who followed, devoted himself to some illustrations of the capacity of the liver cells for proliferation, and illustrated his remarks by an excellent and pertinent set of lantern slides of museum specimens, microscopical sections, and schematic drawings. His material had been derived from five cases of subacute yellow atrophy of the liver, as well as tissues from experimental animals. Four of the human cases were children between four and seven years, and the fifth a woman aged 40 years, and the disease varied in duration from 43 days to seven months. The post-mortem appearances in all consisted of great destruction of the liver tissue and its replacement by fibrous tissue. Such liver-cell areas as had escaped damage underwent proliferation and formed large nodules projecting above the surface of the organ. Microscopically, many of the liver cells showed multiple nuclei, and occasionally definite karyokinetic figures. The intervening fibrous tissue was permeated by numerous ramifying bile-ducts. Experimentally, he found that rabbits gave the most easy appearances to interpret when endeavouring to reproduce proliferation of liver cells. Working on the lines of Ponfick and von Meister he removed large portions of the liver substance and the proliferative changes resulting in the liver cells varied directly in amount and rapidity of development according to the amount of liver tissue removed. After removal of, say, half the liver substance in from a fortnight to three weeks the iver had almost recovered its former bulk; histologically the component cells at the periphery of the lobule were large and hypertrophic, and those cells centrally situated were largely increased in number. In later stages a more trabecular arrangement was again restored. Mitosis in these liver cells (except in rats) was not found with any frequency. He had observed numerous mitosing liver cells in lymphadenoma of the liver and in leukæmia, and marked enlargement and hypertrophy of the liver cells in chronic venous congestion of the liver, and a variety of other conditions. Bearing upon the origin of the duct-like structure mentioned by the previous speakers he referred to a case of biliary cirrhosis in a child aged four months with congenital obliteration of the bile-ducts. In this liver round the outer part of the lobules there was a formation of young connective tissue in which ramified very large numbers of bile-ducts—some in connexion with liver-cell trabeculæ and some with the interlobular bile-ducts; sometimes in one field, and easily in reconstructions, these ducts could be seen in connexion with both. By means of serial sections these formations could be easily reconstructed when it appeared that the liver cell islets were, as a rule, only the outlying spurs of some larger irregular mass of liver cells, and the ducts could be traced back to an interlobular bile-duct. This appearance suggested some purposive growth of the bile-duct which might in some instances be true, but he thought that the real method of their appearance was that the normal ducts lined by a fine epithelium when they got into altered circumstances assumed a cubical form as did the lung alveolar lining in intestinal pneumonia. When they appeared they did to some extent show proliferative change. This method of origin also explained why these ducts were often seen in connexion with both interlobar bile-duct and liver-cell trabeculæ, their very definite duct shape, and their frequent bile content. Experimentally, especially in rabbits, they became evident by about the fifth or sixth day and in from two to three weeks they were very evident at the edge of the necrosis. In from six to seven weeks they began to disappear and did not seem to fulfil any useful function in the direction of recreation of functioning liver tissue.

Dr. JAMES MILLER (Birmingham) said there were two points of fundamental interest in connexion with the subject of regenerative changes in the liver. The first was the conditions under which these changes occurred. It was generally admitted that the functional stimulus, the demand on the part of the body for a certain amount of functioning liver substance, was one of the main factors, and in cases of compensatory hypertrophy probably the chief factor. There must, however, be some other factor, one which was operative generally in all cases of regeneration even in tissues which subserved no special function, such as, for example, connective tissue. Probably this common factor was the removal of the obstruction to cell multiplication by degeneration of tissue. According to Weigert's theory the cells of the adult were prevented from multiplying by the mutual pressure which they exerted on one another. Degeneration of cell elements meant a setting free of this tendency to proliferation in the neighbouring cell units. This explanation of the occurrence of regenerative changes had received a very general acceptance both amongst pathologists and experimental biologists such as Morgan. Possibly it explained the regeneration which took place following incision or rupture. There was, however, another factor which intervened between the removal of the obstruction to cell division and the actual regenerative change—a factor the importance of which had been emphasised by Ribbert in his elaboration of Weigert's theory. That factor was the active congestion or hyperæmia which first followed the degeneration or removal of a part. This active hyperæmia caused a separation of the cell elements proper to the part which thus became surrounded on all sides by a nutrient fluid, osmotic and other physical factors came more definitely into operation, the conditions of nutrition were more favourable, and the cell divided. Now this condition of hyperæmia was present often in a very marked degree just in those cases, such as acute yellow atrophy, when regenerative changes appeared most active. But even compensatory hypertrophy due to increased demand for function might be explained in this way. As Weigert pointed out, increased function meant damage to living substance, and therefore the removal of the barrier to growth; also when there was increase of function there was also hyperæmia with conditions favourable to cell multiplication. Another fundamental point in relation to the question was the significance of the numerous small bile-ducts which occurred in certain cases of cirrhosis and very frequently in acute yellow atrophy. In many cases these indicated an attempt to re-form liver substance. They showed distinct evidence of active growth with mitosis. It was reasonable to suppose that when all liver parenchyma had been destroyed, as was not infrequently the case in acute yellow atrophy, attempts to regenerate liver cells would be made by the smaller bile-ducts. A similar regeneration of gland substance from duct epithelium had been proved experimentally in the case of the submaxillary gland of the rabbit by Podwyssozki and Ribbert. The latter stated this as a law: "Regeneration occurs the more readily in the less fully differentiated cells of the adult organism—i.e., more readily in duct cells than in gland cells." It must not be assumed, however, that the occurrence of large numbers of such small bile-ducts always indicated regenerative activity. In many cases without doubt liver columns under disadvantageous circumstances assumed the character of bile-duct-like structure. Not infrequently a whole lobule might be observed in a case of cirrhosis melting away at its margin into these small bile-ducts.

Dr. CHARLES WORKMAN (Glasgow) called attention to the different forms of bile-ducts to be found in the liver in health: First, large ducts with well-marked columnar-celled epithelium, which were found in the portal areas and which

he considered to be simply for the transmission of the already formed bile; secondly, small often branching ducts with narrow lumen and cubical or spheroidal cells, which he believed probably had a secreting as well as carrying function and which were also found in the portal areas; lastly, the bile capillaries, which in some circumstances could be found between the liver cells in the lobules. These were not, as some of the speakers seemed to suppose, straight radiating channels between two columns of liver cells, but were irregular narrow canals probably formed as required by the pressure of the fluid. Dr. Lionel Beale long ago had shown that it was not possible to inject such canals by pressure backwards from the larger bile-ducts, but when this was attempted the injection mass simply burst into the lobule and surrounded a group of the liver cells. Dr. Workman considered that regeneration took place chiefly by multiplication of the liver cells of the lobules, as he had observed (as was shown by other speakers) that though pseudo-bile-ducts were seen in cases of acute yellow atrophy in great number only a few were found in the chronic forms of disease.

Dr. F. G. BUSHNELL (Brighton) limited his observations to the consideration of regeneration of liver tissue, by which he meant the formation of new liver tissue capable of function in the place of tissue previously destroyed. To this end cases of acute atrophy of the liver, hepatic cirrhosis (inter- and intra-lobular), and congenital obliteration of the gall-bladder and duct were examined. The acute atrophy showed the usual histological features, and especially the formation in the outer zones of lobules of many small bile-ducts or columns of cells two deep. These looped themselves concentrically about the central intra-lobular vein. The liver was a deep red and this was the congested area in which necrosis and marked degeneration of the liver cells had occurred with imperfect repair. There was no attempt at compensatory hypertrophy. Possibly the time allowed by the duration of the disease (three to four weeks) was insufficient, but no attempt at the formation of liver cells was observed. Similarly, in the various cirrhoses and the obliterated gall-duct case, while marked increase of bile-ducts appeared to be present, no evidence of the formation of liver cells was seen. The interpretation of this increase might be an attempt at repair, usually unsuccessful. Thus, it occurred in perihepatitis where no extensive destruction of liver cells had taken place. It appeared to be due to stimulation by an associated inflammation in this case. Similarly, there was evidence that such a proliferative process might accompany both new growth and inflammation as well as necrosis. This might be purposeful or purposeless, and it was comparable to the hypertrophy of Brunner's glands which might be seen beneath a duodenal ulcer, to the extreme metaplasia of the pulmonary alveolar endothelium seen in serositis, to the overgrowth of the sebaceous glands seen in epitheliomata of the skin, and to some forms of interstitial mastitis where adenomatous growth might occur.

On the close of the discussion Dr. CRAVEN MOORE briefly replied, and in the course of his remarks strongly deprecated the multiplication of histological and morphological terminology.

FRIDAY, JULY 31ST.

The meeting of the section was resumed at 11.30 A.M., when Dr. J. C. G. LEDINGHAM (London) presented a contribution to

The Typhoid Carrier Problem.

He gave a *résumé* of the epidemiological and pathological facts which have so far been established in regard to typhoid carriers, including a discussion of the importance of the gall-bladder as the seat of vegetation of the typhoid bacillus. The question of the presence of antibodies in the serum of chronic carriers was then taken up and the results of opsonic experiments with the sera of three carriers under observation were briefly communicated. These sera were found to contain large amounts of opsonic amboceptor which acted only in coöperation with complement.

Dr. Ledingham was followed by Professor I. WALKER HALL (Bristol), whose communication, in association with Dr. D. S. DAVIES (Bristol), dealt with

The "Infective Periods" of Typhoid Carriers.

They related some typhoid-carrier cases which they had met with, and referred to the periodicity of the "effectiveness" of the carrier. In one case, the carrier had caused several outbreaks, but at no time had she transmitted typhoid bacilli in the months of January, February, and March—in other words, her "effectivity" appeared to be most marked from April to December. Another case presented similar features, and a consideration of the cases already reported revealed similar absence of attacks in the first three months of the year. They asked that the observation might be applied to further cases in order to see if other carriers had definite effective periods, and if the periods were due to any seasonal diminution of virulence of the typhoid organism. Directing their attention to the appearances of the fæces in typhoid carriers they cited some facts to show that the output of typhoid bacilli in the fæces was accompanied by unformed or diarrhœic stools. From the determinations already made they concluded that the stools should be examined daily for at least nine months before being deemed as free from typhoid bacilli. Casual determinations were practically valueless. After outlining the methods of their work they suggested that the pulse, the temperature, and the agglutinating and cellular contents of the blood, especially with regard to the mononuclear cells, might yield helpful evidence in the detection of the carrier. As to treatment, they reserved any comments until some experiments which they had in hand were nearer completion, but they suggested that when typhoid convalescents left the hospitals they should be fully instructed as to the possibilities of their being "carriers" and should be supplied with the following set of rules framed for the purpose:—

SUGGESTED INSTRUCTIONS TO TYPHOID CONVALESCENTS.

(To be handed to Patients when Discharged from Hospital.)

Typhoid fever is caused by a germ (the typhoid bacillus) which enters the body in food or drink or swallowed dust. When the convalescent stage is reached the germ may remain in the intestines and cause relapses of the disease. Sometimes the germ remains permanently in the intestines, and may cause a return of the disease many years after the first attack. The germ may also induce the formation of gall-stones. Thus it is evident that the contents of the intestine of the typhoid convalescent are very infective, and that the convalescent may be the unconscious means of transmitting the disease to his or her own family or friends. Cooks, male or female, dairymen or dairywomen, milk vendors, greengrocers, butchers, provision dealers, workers in cocoa, chocolate, or confectionery, waiters and waitresses, and the mother who prepares food for the family, form a class of convalescents in which the opportunities of transmission of the disease are very frequent. The following provisional rules are suggested with a view to diminish the risk of infection:—

1. The hands and nails should be thoroughly washed, first in disinfectant solution, then in soap and water, and well rinsed before touching any foodstuffs, *especially milk*.
2. After the bowels are opened or the bladder is emptied the hands and nails should be at once disinfected and washed.
3. Strong disinfecting solution should be poured over the stools, &c., before the plug of the water-closet is used or the lid of the dry closet is shut down.
4. When the motions are loose the risk of infection is increased and additional care should be taken.
5. The convalescent should periodically visit the medical attendant so that the blood, &c., may be tested, and measures may be taken to control the action of the germs. As there is generally no need to deal with the drains or to disinfect rooms or houses for these special cases no upset of the domestic arrangements is necessary.
6. In the household where a patient is convalescing from typhoid fever the additional precautions of boiling all the milk or water used for drinking or in the preparation of food should be undertaken, and uncooked foods should be avoided.

So far as possible, any typhoid convalescent who, after recovery, had to do with the preparation of food, should be earnestly advised to submit himself or herself to medical observation from time to time.

Dr. R. D. SMEDLEY (Sheffield) asked whether any investigations had been made into the frequency of typhoid carriers existing in classes specially liable to harbour the typhoid bacillus—for example, medical men and nurses attached to fever hospitals or nursing typhoid cases. He further asked whether the examination of the blood for the presence of precipitin or precipitinogen would assist in the detection of carriers.

Dr. E. GOODALL (London) mentioned the fact that the typhoid patients, who were generally adults, discharged from Homerton Fever Hospital, were instructed in the care to be exercised subsequently in the preparation of food, &c. He also asked whether or not the technique of opsonin estimations with regard to bacillus typhosus was difficult of application.

Dr. STANLEY KENT (Bristol) asked if blood cultures were made during the pyrexial attacks of the carriers referred to by Professor Walker Hall.

Professor R. MUIR (Glasgow) asked if the mononuclear leucocytosis referred to by Professor Walker Hall was relative or absolute.

The PRESIDENT of the section (Dr. C. J. MARTIN, London) remarked upon the liability of contamination of hands and nails whilst carrying out the normal morning toilet even in cleanly individuals, which would subsequently, unless suitable precautions were taken, be transferred to foodstuff. Professor Walker Hall's suggested "periodicity" corresponded with the warm third of the year when the air temperature favoured the growth of the typhoid bacillus, when such was added to foodstuffs, for example, milk, and the subsequent consumers would consequently receive larger doses of infective material than would be available in the colder months of the year.

Dr. LEDINGHAM and Professor WALKER HALL briefly replied and the President of the section then called upon

Dr. H. MAXWELL TELLING (Leeds) who presented a communication on

Acquired Diverticula of the Sigmoid Flexure,

in which he said that multiple diverticula of the sigmoid flexure was a condition of great clinical importance, yet Graser's diverticula, as they were called in Germany, were almost entirely overlooked until that observer published an important case in 1898. Diverticula, both congenital and acquired, occurred in practically any part of the small and large bowel and were usually easily differentiated from one another. The most familiar example of the congenital variety was Meckel's diverticulum. Acquired diverticula occurred most frequently in the lower part of the descending colon and the sigmoid flexure, close to the mesenteric attachment, more rarely on the convexity or into the appendices epiploicæ. In size they varied from mere macroscopic visibility to the size of a hazel-nut; when small they were semi-globular but became somewhat flask-shaped with increased size. All the coats of the bowel were usually represented in them, but occasionally the muscular coat was scanty or absent. They were almost invariably filled with fæcal material, generally as firm concretions. The cases in which diverticula were observed included, (*a*) accidental post-mortem "finds"; and (*b*) those in which the diverticula had undergone secondary pathological changes, often causing clinical symptoms. As to the origin of these diverticula the possibilities were three in number: (1) that they were of congenital origin, being present at birth and progressively enlarging as life advanced; (2) that they were formed in later life from pathological causes operating on the gut wall; and (3) that there existed in certain bodies a congenital anatomical predisposition to their formation, this formation, however, being determined by pathological causes operating during the life of the individual. The facts at present known regarding the etiology of the condition were then briefly summarised. No case had been recorded in a child; the majority were in old or even aged subjects, the youngest being 22. The average age in 80 cases was 60 years. About 65 per cent. were males. Many of the examples had occurred in obese subjects or in those who had been obese at some previous time, and such excess of fat probably explained the frequency with which the appendices epiploicæ were invaginated by the diverticula. Most observers regarded constipation as of primary, and some of sole, importance, but if it was the sole cause diverticula would be very much commoner than they were. Probably flatulence also acted in the same way as constipation by increasing the pressure from within. The relationship of diverticula to the vessels piercing the gut walls had been closely studied, for the large majority occurred at the points of entry of vessels. Graser had concluded that when there existed congestion and back-pressure in the mesenteric veins the points of entry of the vessels through the gut walls became thereby still weaker spots and favoured the occurrence of hernial protrusions through them. Sudsuki, however, differed from Graser and thought that the lax and fat-containing connective tissue round the vessels was the cause of the weakness of the wall at their points of entry, and if such fat became wasted from disease a still more pronounced *locus minoris resistentiæ* resulted. Muscular weakness or deficiency had been suggested by Schrieber as the cause of diverticula occurring at the convex side of the bowel, and Beer explained all cases by the "worked-out" muscularis of constipated or obese senile individuals. Finally, it was possible that there existed a congenital arrangement of the muscle fibres of the gut which in later life and under certain conditions led to those areas of thinning or muscular insufficiency, but the balance of evidence at present favoured the view that these diverticula were of pathological origin and occurred as a result of a fortuitous combination of several conditions in the same body. These diverticula, as diverticula, caused no trouble, but their "secondary pathology" was of practical importance. The earliest changes noted were an atrophy of the muscular layer of the sac and of the mucosal glands—and as a mere mechanical result perforation might, and did, occur. The fæcal contents of these sacs possessed a varied bacterial flora which gave rise to inflammatory changes in the sac wall and its neighbourhood; thus organisms passed through the diseased wall and determined a general or local peritonitis, or local abscess or gangrenous inflammation, or led by chronic irritation to a proliferative inflammatory reaction. He wished to mention those secondary pathological processes which were peculiar to these multiple diverticula, or of special importance in connexion with them. The most important secondary pathological processes peculiar to these multiple diverticula were (1) chronic hyperplastic peri-diverticulitis; (2) the formation of adhesions; (3) the tendency to the perforation of other viscera; and (4) the combination of any of the former three. With rarer secondary pathological processes in the diverticula, such as the development of carcinoma or chronic mesenteritis, with its mechanical results, he had not time to deal. In conclusion he emphasised the fact that the condition was of much greater frequency than had hitherto been supposed. He had been able to collect 107 cases (24 of which he had added to the existing literature) and urged the re-examination of specimens in the museums, and routine close inspection of the sigmoid flexure at necropsies, and of sigmoid tumours removed at operation.

Dr. D. STANLEY (Birmingham), Professor MUIR, Dr. C. DICKSON (Edinburgh), and Dr. WORKMAN discussed the material presented with this communication, and Dr. TELLING replied briefly.

Dr. IVY MACKENZIE (Gortin, Tyrone) then presented a communication on

Spirochæta Pallida in the Lesions of Syphilis,

illustrated by some striking lantern slides of micro-photographs. Sections were demonstrated showing the presence of spirochæta pallida in the lesions of congenital syphilis. In one case the lungs were airless and presented the appearance of "carnification." Microscopic examination showed thickening of the bronchial walls and desquamation of the epithelium. The carnification resulted from thickening of the alveolar walls, due to proliferation of pericapillary cells, as contrasted with tubercle when carnification was due to organisation of alveolar contents; spirochætæ were present in the bronchial walls and in the thickened walls of the blood-vessels. A syphilitic liver showed focal necroses similar to those sometimes met with in typhoid and pneumococcal septicæmias; in these necrotic areas masses which did not stain with aniline dyes but stained readily with silver were shown and at the edges of these masses the appearances were such as to constitute evidence that they consisted largely of broken-down spirochætæ.

Dr. MARC ARMAND RUFFER (Alexandria) and Dr. J. GRAHAM WILLMORE (Alexandria) made an exceedingly interesting and important communication under the title of

A Note on the Production of Immunity against Dysentery Toxin.

They first referred to the already known facts that bacterial toxins digested artificially for some hours with pepsin and hydrochloric acid lost their toxicity and that five times the minimal fatal dose of dysentery toxin digested in pepsin and hydrochloric acid (0·2 per cent.) for 18 hours produced (according to Doerr) no symptoms. The change was gradual, for after eight hours the fluid was still toxic when neutralised. The loss of toxicity was due to the pepsin and not to the acid. In their experiments the bacillus employed was the Shiga-Kruse (type No. 1) supplied by Professor Hewlett. At first they worked with a filtered toxin, which was clear and yielded a heavy precipitate with ammonium sulphate but none with antidysenteric serum; the minimum fatal dose for large rabbits was 0·1 cubic centimetre intravenously. But as the filtrate rapidly lost its toxicity, a bacillary emulsion, sterilised by exposure of one hour to 57° C., was preferred, as its toxicity remained constant. The minimum fatal dose for large rabbits was 0·2 cubic centimetre and produced (1) a rise of temperature, sometimes of 3° C. within three

hours of inoculation, followed by a rapid fall; (2) profuse diarrhœa, often setting in within half an hour of the inoculation; and (3) paralysis followed by chronic convulsions, coma, and death. Antidysenteric serum completely precipitated the bacillary bodies; the clear supernatant fluid was more toxic than the washed precipitate. The clear fluid obtained by the filtration of bacillary emulsion autolysed at 37° C. for 48 hours was also toxic, though the addition of specific serum produced no precipitate. A minimum fatal dose of bacillary emulsion after digestion with pepsin and hydrochloric acid for 12 hours, then neutralised or rendered slightly alkaline, produced no symptoms in rabbits, although the addition of serum to the emulsion thus treated still produced clarification. Some toxin was still present, from 5 to 10 times the original minimum fatal dose being needed to cause death. After 24 hours' digestion the minimum fatal dose was from 15 to 20 times; after 48 hours' from 20 to 25 times greater; but after 72 hours no symptoms were produced even with 30 times the minimum fatal dose. A minimum fatal dose rendered harmless by digestion and no longer clarified by specific serum nevertheless conferred new properties on the serum of an animal injected with it. Such a serum agglutinated the bacillus of dysentery and clarified the untreated bacillary emulsion even in a dilution of 1 to 500. The opsonic index was raised from 1 to 2·4 after two injections. Such an animal after a few days resisted one or even several fatal doses of undigested toxin, although its own serum was not notably antitoxic. A rabbit, for instance, which had received three injections resisted seven days after the last injection 20 times the minimum fatal dose of untreated emulsion without showing any symptoms whatever. The immunity was produced quickly by this method. Rarely in two days, always in six days, animals were immune to six times the fatal dose. The advantages of this method of immunisation were as follows. Firstly, that the animal suffered no pain and was not ill. Secondly, that the process of immunisation was innocuous; injections of even small doses of bacillary emulsion were often fatal, but these observers stated that they had never lost an animal in the process of immunisation with digested emulsion. Thirdly, that the process was rapid, a high degree of immunisation being produced even in small animals in six days. In the same period of time it was practically impossible to immunise an animal by any other method. Fourthly, although animals thus immunised had been kept for over three months no subsequent symptoms had been observed. In conclusion they suggested the possibility that this method might be applied to other diseases as they had obtained a highly agglutinating serum by inoculating an animal with digested typhoid emulsion.

An interesting discussion followed, in which Dr. LEDINGHAM, Professor MUIR, and the PRESIDENT of the section took part, the last-named pointing out that this was probably the first instance in which active immunity had been conferred in the direction of the production of antitoxic and antibacterial substances in the blood serum of an animal injected with the products of bacterial growths which in themselves were non-toxic.

Dr. RUFFER, in his reply, said that the method had been suggested to him by reading of some experiments by an observer (whose name had escaped his memory) who had digested egg albumin with pepsin and hydrochloric acid and had used the digested material in the injection of animals and had found that the formation of a specific albumin precipitin had resulted in the serum of the inoculated animal.

The proceedings of the section were then brought to a close.

THE ANNUAL EXHIBITION.

IV.—SANITARY APPLIANCES.

By far the greater number of exhibits in this section related to antiseptic and disinfectant preparations. Apart from such the section was not profusely represented and amongst the articles shown few were of a novel character. One interesting and important fact, however, in connexion with the disinfectants that were shown is the obvious determination of the manufacturers to bring their preparations up to standard germicidal strength. There were several preparations, for example, on the stall of the Sanitas Co., Limited, of Locksley-street, Limehouse, London, E., having guaranteed germicidal coefficients attached to them, as, for example, sanitas-okol with a coefficient of 20 as a minimum with bacillus typhosus under test; sanitas-bactox with a coefficient of 10 to 14; and special sanitas fluid with a coefficient of 7 to 8. The Jeyes' Sanitary Compounds Co., Limited, of 64, Cannon-street, London, E.C., whose representatives were largely responsible for initiating the movement for germicidal standardisation, exhibited their now well-known series of cyllin compounds, medical cyllin itself showing a Rideal-Walker coefficient of 20. This bactericide is also contained in an inhalant, capsules, syrup, pastilles, soap, and so forth. Messrs. Newton, Chambers, and Co., Limited, of Thorncliffe, near Sheffield, exhibited a number of their izal preparations, including "medical izal," a refined product for medical and surgical use, izal disinfectant fluid which is said to be more powerful than corrosive sublimate solution, and soaps and ointment. Messrs. B. Kuhn and Co., of 16, Rood-lane, London, E.C., exhibited specimens of the powerful germicide chinosol, which has amongst its advantages that of being soluble in water, of being without a coagulating effect on albumin, and of being in the quantities sufficient for antiseptic purposes non-poisonous. Ronuk may well be placed under the heading of "sanitary appliances," since its application as a polish keeps surfaces perfectly clean and therefore discourages the accumulation of dirt, dust, and germs. Messrs. Ronuk, Limited, of Portslade, near Brighton, exhibited a number of "polishes," amongst which were two sorts of "hospital ronuk" for special use in the wards. The mention of dust brings to mind the portable dust extracting machine of the British and Colonial "Atom" Syndicate, of Parliament-street, Harrogate. This works by power or hand on the vacuum principle, the dust-laden air passing through a filter. Messrs. Slack and Brownlow, of Abbey Hey, Gorton, near Manchester, exhibited various types of their "Brownlow" germ filter, made of porous porcelain impervious to micro-organisms. There was also a hospital filter exhibited with a thermometer attached, providing hot and cold sterile water in surgical practice.

V.—MINERAL WATERS, BEVERAGES, ETC.

We were glad to see in this section of the exhibition distinct evidences of a movement to bring more prominently to the notice of the medical profession and the public the merits of our home health resorts. We have already referred to the excursion which was made by a fortunate few to Buxton where everything connected with the special treatment there was explained. The stall at the exhibition contained an excellent series of photographs of the bathing establishment, pump room, and other balneological accessories. Altogether the important thermal mineral water station at Buxton is a complete equipment which ranks level with any similar continental spa. The advantages of Leamington as a health resort and place for special treatment were brought to the notice of the visitors by the authorities of that royal borough. The well-known sulphur waters of Harrogate served to remind the profession of the excellent steps which have been taken to make this health resort a really up-to-date centre of hydropathic practice. Not the least important matter properly taken into consideration by the Harrogate authorities is the provision of amusements of all kinds, outdoor sports, and so forth, a cue furnished by the successful plan adopted at continental spas. Messrs. Ingram and Royle, of East Paul's Wharf, 26, Upper Thames-street, London, E.C., exhibited a series of specimens of natural mineral waters amongst which were Carlsbad waters and Sprudel salt, Contrexéville (Pavillon), Evian-cachat, Friedrichshall, Selters, Vichy, Hunyadi Janos, and a number of others. Messrs. Findlater and Co., Railway Approach, London Bridge, S.E., selected a number of medicinal waters for notice, including Carabana (with sulphate of soda in excess of the magnesian salt); Ems, an alkaline water useful in catarrhal affections; Levico, an arsenical ferruginous water; and Taunus, a sparkling mineral table water. The springs of Pöstyén (Hungary) were illustrated at the stall presided over by Mr. H. N. Davidge, of 42, Shaftesbury-avenue, Piccadilly-circus, London, W. At Pöstyén the waters are thermal and said also to be strongly radio-active; there are, further, some hot mud beds containing sulphurous compounds. The Apollinaris Co., Limited, of 4, Stratford-place, Oxford-street, London, W., had a very attractively designed and well-stocked exhibit, including specimens of the natural bitter water, Apenta, and the well-

known water from the remarkable spring near Neunahr which still yields upwards of 30,000,000 bottles a year. It may be pointed out that Apollinaris water stands out from many other sparkling table waters in containing a very distinct amount of bicarbonate of soda which renders it valuable as an antacid and in catarrhal affections.

VI.—PUBLICATIONS.

There were several stalls devoted to the exhibition of standard works and new books on surgical and medical subjects. The following publishers were represented: Messrs. Appleton and Co., 25, Bedford-street, Covent Garden, London, W.C.; Messrs. Henry Frowde and Hodder and Stoughton, 20, Warwick-square, London, E.C. (Oxford medical publications); Messrs. Rebman, Limited, 129, Shaftesbury-avenue, London, W.C.; Messrs. W. B. Saunders Company, 9, Henrietta-street, Covent Garden, London, W.C.; Messrs. H. K. Lewis, of 136, Gower-street, London, W.C. (practical series); Messrs. J. B. Lippincott, of 5, Henrietta-street, Covent Garden, London, W.C.; and Messrs. John Wright and Sons, Limited, of Bristol. Compared with recent years it may be said that modern medical literature was rather more strongly represented on this occasion.

MEDICINE AND THE LAW.

The Workmen's Compensation Act.

TWO recent decisions, one delivered by the House of Lords, the other by the Court of Appeal, advance a trifle further the interpretation of the Workmen's Compensation Act at the expense of the public. The first, that of Wilkinson *v.* The Oceanic Steam Navigation Company, was delivered in the case mentioned in THE LANCET of Jan. 11th, p. 123, in which a man who had been in necessitous circumstances, and who probably was not of normal health and strength, was allowed to work his way home on board a steamship, and was struck down by "heat-stroke" in the stokehold, with the result that he died at sea. The Recorder of Belfast awarded compensation to the widow, the Court of Appeal in Ireland upheld his decision, and the House of Lords also has now held that the heat-stroke was an "accident" for the purpose of the Workmen's Compensation Act. In delivering judgment the Lord Chancellor observed that in common language it was a case of accidental death, and added that he felt that in construing the Workmen's Compensation Act as in other cases, there was a risk of frustrating its object by excess of subtlety, which he was anxious to avoid. With reference to this question of interpreting a vaguely worded and inexplicit Act of Parliament, which, as has been pointed out above, is done at the expense of litigants, it may be mentioned that Lord Macnaghten, certainly not the least able and learned of the Lords of Appeal, dissented from the judgment of Lord Loreburn, with whom Lord Ashbourne agreed. Lord Macnaghten regarded the death described as by "heat-stroke" as parallel to death from pneumonia following a chill, such as a workman might contract in the course of his employment, and did not think that such a death should rank as an "accident." The decision thus recorded by the House of Lords reminds us that probably before very long it will have before it the case mentioned in THE LANCET of August 1st, p. 327, in which permanent injury following poisoning by sewer air in a man employed to work in sewers was held by the Court of Appeal not to be the result of an accident. The second decision referred to above was delivered by the Court of Appeal in the case of Haylett *v.* Vigor and Co., and is of interest to the medical profession as informing them of the object with which their evidence must be prepared in cases such as that described in it. It also is, no doubt, a case which in due course will reach the House of Lords. The deceased, whose dependents claimed compensation, was a painter who for three or four days in August worked for Messrs. Vigor and Co. In September he showed symptoms of lead poisoning. On Sept. 25th he was taken to the hospital, but by then the symptoms of plumbism had disappeared. On Oct. 2nd he died, the immediate cause of death being found by the county-court judge to be granular kidney. The county-court judge also found that granular kidney is a sequela of lead poisoning but is also a sequela of gout, of alcoholism, and of other complaints, and also that the lead poisoning was not proved to be the cause either of the granular kidney or of the death, but that the employers, Messrs. Vigor and Co., did not prove that it was not so. To these facts had to be applied the eighth section of the Act which awards compensation when a certifying surgeon "certifies that a workman is suffering from a disease mentioned in the third schedule of this Act" or when "the death of a workman is caused by any such disease." In the third schedule referred to there is given as a description of one of the diseases thus to be treated as accidents, "lead poisoning or its sequelæ," and among the processes in one of which the workman must have been engaged in order to entitle him to recover "any process involving the use of lead or its preparations or compounds." The county-court judge in the case before him held that as granular kidney is one of the sequelæ of lead poisoning, the dependents of the deceased were entitled to recover, although it had not been proved that the granular kidney from which the man died was a sequela of the lead poisoning from which he had suffered. The case having been argued at length in the Court of Appeal, the Master of the Rolls, Lord Justice Farwell, and Lord Justice Kennedy delivered reserved judgments, the effect of their decisions being that the county court judge was wrong and that the words "or its sequelæ" do not imply the liability of an employer to a workman contracting any disease which is recognised as a sequela of lead poisoning (or which may be caused by something else), but that it must be proved by the claimant that the disease was in fact a sequela of lead poisoning in the particular instance in respect of which compensation is claimed. In the words of Lord Justice Farwell, the section cannot be read as if the words were "lead poisoning or granular kidney," but rather as if they were "lead poisoning or granular kidney produced by or consequent on lead poisoning." The interpretation of the Act thus laid down appears to be just and reasonable, and if it stands will render necessary in all cases such as that described the fullest possible evidence enabling the court to trace the sequela to the original disease. No doubt in some cases the evidence on this subject will reduce itself to the negation of the presence of the sequela until after the patient suffered from the original disease, and also the exclusion of other sources from which the supposed sequela might possibly have arisen.

A Question of Compensation.

A letter from Mr. W. M. Crowfoot in THE LANCET of August 8th, p. 419, calls attention to a case in which it was found that insurance against liability under the Workmen's Compensation Act on the part of a hospital did not provide adequate compensation for a nurse who in the exercise of her vocation contracted purulent ophthalmia and as a result lost an eye. It must be remembered that the Workmen's Compensation Act, which is evidently the statute referred to by Mr. Crowfoot, and not the Employers' Liability Act which he mentions, was intended to provide some degree of compensation for workmen disabled in factories and in other classes of employment, for sailors, domestic servants, and many members of the working classes, and that nurses, clerks, and others not suggested by the term "workman" have been included more or less incidentally in it. The insurance company referred to by Mr. Crowfoot probably took a correct view of their liability under the policy between them and the Beccles Nursing Institute. In other words, they undertook certain risks in return for a certain agreed premium. It by no means follows that they would not have issued a wider policy in return for a proportionally larger premium or that such an insurance would not be a wise and proper one in the case of nurses who might be glad to combine with their employers in insuring themselves should these not see their way to pay the higher premiums necessary. Many employers only insure their domestic servants strictly with a view to protecting themselves against having to meet unaided claims under the Workmen's Compensation Act, but one of the effects of the Act has been that a large number of masters and mistresses have done more than this; they have done what they never did before under the encouragement of the insurance offices and have insured their servants with the object of meeting the pecuniary risks of illness which do not fall under the heading of accidents, and with regard to which their servants have no legal claim upon them, as well as those limited risks which the law compels them to undertake.

THE LANCET.

LONDON: SATURDAY, AUGUST 22, 1908.

The Physical Training of Recruits.

A PAPER presented to Parliament by Mr. ACLAND at the latter end of the last session goes far to show that the quality of the material from which our recruits are derived necessitates the employment of a trained military medical expert to decide upon their fitness for the work. It shows also the difficulty of the task of supervision which will fall on the medical officers attached to the territorial forces under Mr. HALDANE'S scheme. But the publication of an interim report on the physical training of recruits made by a committee presided over by Sir ALFRED KEOGH, the Director-General of the Army Medical Service, marks a step in the application of scientific knowledge towards the fitting of our soldiers for their onerous duties, and it is possible to conceive that a less rigorous standard for entry, coupled with intelligent training after enlistment, may help to swell the ranks of our shrunken army. All nations, at any rate all which are compelled to support an army, have at different times adopted some system of exercises for the training of their soldiers. The Greeks instituted such exercises when, with the increased number of their cities, a sedentary life became more common than formerly. In the early days of the Republic the Romans adopted athletic training solely with a view to military efficiency: with them the exercises were continuous and the officers exercised with the men. We are told that MARIUS never missed a day at the Campus Martis and SALLUST states that POMPEY was able, at 58 years of age, to run, to jump, and to carry a load as well as the most robust soldier in his army. Swimming was especially taught by the Romans, and so essential was it considered that a man was counted completely ignorant who could neither read nor swim. In England in mediæval times, when the whole nation was drawn upon for military service, the upper classes with sword and lance, the lower classes with the bow, took constant exercise in peace of the sort that fitted them for war; while we know from history that wars, big or little, occupied at least as much time as the spells of peace. Our army is now a specialised service and is largely drawn from urban populations unused to athletic exercises of any kind. The physical training of the recruit is therefore a most important matter.

The report of Sir ALFRED KEOGH'S committee lays stress on the importance of gradual progression from easy to more severe work, and we agree that we have here the very foundation of all useful systems of training recruits. Moreover, the form of exercise prescribed requires to be intelligent. It is most probable that conventional military positions during gymnastic exercises and during marching have been in the past a fertile source of disordered heart and circulatory and pulmonary troubles in those undergoing military training. Upon the conclusion of the committee that the main principle of military athletics should be progressive exercise, as the natural method of improving the powers of endurance, it follows that the ability of the recruit to cover long distances in the ranks without undue fatigue should be regularly tested by practice. But the marching action should not be in some constrained and pedantic manner. The late Professor A. E. PARKES, wisest of sanitarians and an experienced man with armies, remarked that marching was certainly much more fatiguing than free walking; and in the French army and by some commanding officers in our own, the men are allowed to walk easily and disconnectedly except when closed up for any special purpose. Such a practice may look slovenly to the eye of the shallow observer, but by the true officer, whose object at the end of a long march is to have his men so fresh that, if necessary, they could go at once into action, easy marching is seen to be the soldier-like course, and the attitudes which lead sooner to the loss of the soldier's strength and activity are recognised as dangerous. (We refer our readers to a letter which appears on p. 586 of this issue of THE LANCET with reference to this.) The recommendation of the committee, in which it is insisted that training of the recruit should take place so far as possible in the open air, whatever the season of the year, is also most wise, and the discouragement of gymnastic and acrobatic performances in place of exercises of more distinct military value will be endorsed by all who know.

But whatever system of training is adopted it is necessary that stock should be taken of the age of the recruit, and we regret that this all-important point seems to have been to a great extent omitted in the report. Few men under 21 years of age, however carefully trained, have the necessary powers of endurance for completely satisfactory active service in the field. No doubt recruits taken young eventually become the best soldiers if they are given sufficient time to mature under favourable hygienic conditions, but this time must be given to them. It must never be forgotten that in the young recruit the osseous framework is incomplete, the heart immature, the lungs in a period of growth, and the liver, spleen, and kidneys in a state of modification and transition. Take, for example, the sacrum, through which the weight of the trunk is immediately transferred to the haunch bones and to the lower limbs. Its lateral and inter-vertebral epiphyseal plates only commence to ossify about the eighteenth year and are not complete until about the twenty-fifth. We know that in young recruits the epiphyses of both the heads and tubercles of the ribs are ununited and the different segments of the sternum are not yet ossified. The evil effects of excessive pressure or pressure in an abnormal direction on the chest, the bones of which are still soft and yielding, must be obvious. Here we have a distinct cause tending to disturb the circulation and to induce abnormal conditions in the immature heart and pulmonary tissues, and these if associated with specific disease so often result amongst soldiers in implication of the lining membrane of the great vessels with aneurysmal dilatation. Without exception commanding and medical officers in charge of troops during the trying conditions of

actual warfare have confirmed by their personal experience these deductions based on anatomy and physiology. In Lord ROBERTS's march from Cabul to Candahar in 1880 it was the young soldiers who succumbed to its fatigues, while the old soldiers became hardier and stronger every day. For example, it is on record that the 72nd Highlanders received two large drafts of young soldiers while at Cabul. They had on August 28th, 1880, absent from their ranks from maladies incidental to hard marching and exposure to the sun a much larger number of men than were absent from the ranks of the 60th Rifles and 92nd Highlanders, which regiments were mainly composed of seasoned and matured soldiers.[1] A former Director-General of the Army Medical Service, Sir JAMES MCGRIGOR, who served throughout the Peninsula war from 1805 to 1814, testified that corps which arrived for service in the Peninsula were always ineffective and sickly in proportion as they were made up of men who had recently joined the ranks, and he found that 300 men who had served five years were more effective than a regiment of 1000 men who had just arrived and who were young recruits—lads unequal to the harassing duties of service—an experience which is still more true regarding India.

The Surgeon-General of the United States army in his report for 1885 found that the proportion of invalids below 25 years of age was so great that he considered that it might be fairly questioned whether the services rendered by these young men were equal to the cost of their maintenance. Inspector-General JAMES PORTER, C.B., the senior medical officer in charge of the Naval Brigade during the recent war in South Africa (now Director-General of the Royal Navy Medical Service), arrives at precisely the same conclusion in the following words: "Every year of age below 25 yields a rapidly increasing ratio of sickness. The partially developed physique does not stand the strain of campaigning."[2] We might multiply instances of such authoritative pronouncement, but in conclusion we must reiterate what we have already pointed out in previous articles,[3] that whatever the system of training the result will ever be mainly influenced by the material originally selected. From the all-important point of view of efficiency, to say nothing of the serious financial considerations involved, no duty of a service medical officer is of more importance or of more value to the State than the examination of recruits. There is no greater delusion than to imagine that this examination can be carried out properly save by medical men who have received special instruction on the subject; in the absence of constant experience and the most careful consideration frequent mistakes must occur.

The Imperial Cancer Research Fund.

THE sixth report of the Imperial Cancer Research Fund was presented at the annual meeting of the Fund on July 14th, and a full abstract of it was published in our columns in the following week. Although the latest report of this valuable association for research does not contain any startling statements it is as interesting as any of its predecessors. In the first place, the laboratories of the Fund have afforded great assistance to others engaged in cancer research. Dr. EDGAR GIERKE, assistant to Professor ASCHOFF, director of the Pathological Institute of the University of Freiburg, worked in the laboratories for six months, and since his return to Germany he has been appointed director of the Pathological Institute, Carlsruhe, and a paper by him, founded on his work in the Imperial Cancer Research Fund laboratories, will appear in the forthcoming third volume of "Scientific Reports." Material for investigation, particularly mice with growing cancer, has been supplied to many investigators both at home and abroad. The laboratories have also been visited by a large number of distinguished scientific men from America, France, Germany, and elsewhere, who were anxious to become acquainted with the details of the organisation and administration of the Fund and of the experimental processes employed in the laboratories. During the year there has been a very great increase in the scope and number of the investigations conducted in the laboratories, and these have been possible only by the largely increased accommodation liberally placed at the disposal of the Fund by the committee of management of the Royal College of Physicians of London and the Royal College of Surgeons of England. This additional work has necessarily involved an increase in the number of laboratory attendants and a corresponding increase in expenditure. The statistical investigations have been continued; more than 10,000 reports of cases, in which a complete pathological examination has been made, have been received from hospitals in this country and the number of cases reported from places abroad is gradually being increased. The director promises us in the near future a scientific report on the results of these statistical investigations.

Dr. M. HAALAND'S work, as summarised in the report, shows that this investigator has devoted 18 months to experiments and direct observations on the development of sarcomata during the propagation of carcinomata and normal cells have been observed becoming malignant. Thus the experimental study of cancer in animals has come to have a direct bearing upon one aspect of the etiology of the disease in man. Dr. J. A. MURRAY has contributed a paper in which the zoological distribution of cancer has been reviewed and new observations have been recorded, and to this account is appended a paper showing some of the fallacies which account for the apparent occurrence of forms of cell division in cancer similar to those found in reproductive tissues during the ripening of the sexual cells. Dr. MURRAY deals with spontaneous cancer in mice on a basis of more extensive and varied material than has been collected in any other cancer research laboratory and we are not surprised to learn that the investigation of this material has occupied him for the past four years. Dr. GIERKE has studied the hæmorrhagic carcinomata of mice and Dr. MURRAY has been working on a transplantable squamous-celled carcinoma. The development of sarcomata from the stroma of transplanted carcinomata was first observed by EHRLICH and APOLANT and it has also

[1] *The Times*, Oct. 7th, 1880.
[2] Medical Notes of the Naval Brigade, South Africa, 1900.
[3] THE LANCET, August 24th, 1907, p. 539; and March 7th, 1908, p. 727.

been recorded from the laboratories of the Imperial Cancer Research Fund in a paper in the *Berliner Klinische Wochenschrift* and Dr. HAALAND describes in great detail and with scrupulous exactness the process, as it has repeated itself nine times in one tumour strain. The paper on the natural and induced resistance of mice to the growth of cancer marks the important advance which was made by the discovery in the laboratories that animals can be rendered resistant to cancerous inoculations by preliminary treatment with normal tissues. Dr. B. R. G. RUSSELL has found that the absence of growth in resistant animals is due to a failure of the tissues to furnish connective tissue and vascular scaffolding for the introduced cancer cells. It has further been found possible to show that the protection which normal tissues induce is most effective against cancers arising in the same tissue; for example, skin protects best against skin cancer. Another elaborate investigation has occupied Dr. S. M. COPEMAN and Dr. WILSON HAKE for two years; they have been able to show that the rapid proliferation of cancer cells calls forth a compensatory response on the part of the digestive system of the host. At the time of the second scientific report the value of JENSEN'S tumour was not generally recognised and not a few even disputed its cancerous nature. Now the investigators working under the Imperial Cancer Research Fund have obtained a large number of tumours inoculable and all have admitted the really cancerous nature of the growths. All who have studied the results already obtained will have no doubt as to the future of the experimental investigation of cancer but patience must be exercised by us all and we must not expect results too soon. No definite evidence has been obtained of the value of any empirical remedies in the treatment of cancer. The value of trypsin which was greatly belauded by some persons a few months ago has been further investigated and it has been found that the benefits claimed for the treatment by this ferment have not been confirmed. It has been suggested that an International Committee on Cancer Research should be established with its headquarters in Berlin, and the general superintendent, Dr. E. F. BASHFORD, has been invited to join it, but the executive committee of the Imperial Cancer Research Fund considers that more advantage is to be gained by encouraging an active interchange of views and of material between the workers in the laboratories in the various countries.

It cannot be said that the financial aspect of the Fund is altogether satisfactory. Three legacies have been received amounting to £10,100, but apart from these the donations and subscriptions have amounted only to £504, as compared with £3515 in the previous year. Fortunately, the Fund possesses a capital amounting to £126,200 and the interest of this can be used, but even with that the expenditure has exceeded the receipts by nearly £2000. The Royal College of Physicians and the Royal College of Surgeons provide free of all charges the laboratory accommodation as well as all the attendant expenses connected with the rates and taxes and lighting, and if the Colleges are unable to continue this assistance in the future the annual expense will be greatly increased. Such a condition of affairs should not exist. In the largest and richest city in the world an institution which has already done much good work in the investigation of such a scourge as cancer should not be allowed to want for funds. The cancer research work does not receive the slightest financial assistance from the Government, and this must be almost incomprehensible to foreigners, for in any foreign capital such an important institution, founded for such an important purpose, would be highly endowed. It may have been thought that the large donation made by Mr. and Mrs. BISCHOFFSHEIM last year precluded the need for subscriptions, but it must not be forgotten that this large amount is capital and only the interest of it is to be used. We cannot think that the public will allow the extent of these investigations to be curtailed by the want of money. At present some £2000 a year more are needed. We have great hope that the future will show even more rapid progress in the investigation of cancer than has been attained at present, and any support given to the Fund will be fully utilised. All who are acquainted with the working of the laboratories appreciate how largely their success is dependent on the knowledge and zeal of the superintendent, Dr. BASHFORD.

The Motor Nuisance.

WE sincerely hope that the statements which have gained currency recently to the effect that the motor nuisance is to be the subject of careful inquiry by representatives of the Government are true. Not long ago some persons confidently predicted that the outcry against the new traffic would soon cease, as it did against the steam-engine when railways superseded the coach, or against the cycle when the "scorching cad on castors" was in evidence. The prediction has so far proved inaccurate, for, on the contrary, the feeling against the highway terrors created by motor traffic is stronger than ever, and if we are not mistaken the time is not very far distant when we shall see the acceptance of measures for which the majority of the community will be grateful, and which will be framed to provide for chiefly the prevention of dust and evil emanations and of the driving at a high speed through critical places. Apart from the danger to life and limb arising from reckless driving and, we are bound to add, from also the carelessness and indifference of those who use the road in other ways, we cannot help regarding the dust question as one of very grave importance. We hear every day of gardens, crops, and houses being damaged, if not ruined, by the constant bombardment of dust, while it must be obvious also that the bacteriological potentialities which are bound to exist in road dust cannot be stirred up and scattered in all directions without scattering the seeds of disease also. Endemic respiratory diseases are already known to be the sequel to the chronic condition of dust into which the air of many of our villages is thrown by motor traffic. Throat, eye, and nose troubles are common enough, and even damage to the lungs has been traced probably to the insidious dust. Motor traffic, in short, is exposing all those who live close to the highways to the same evils which occur in many industries in which dust injurious to factory workers is produced and which the Government is doing its best to mitigate. The nuisance

has been created by the motor-car and therefore a large share of the expense of removing this nuisance might in common fairness be borne by the motorist. The roads were not made for motor traffic but for a traffic that caused little, if any, serious nuisance due to dust; if the roads are now to be adapted to the requirements of motor traffic, then its patrons should be made to pay a preponderating fraction of the bill. As to a speed limit being imposed, there can be no doubt that the temptation to drive fast is very strong, but the public safety must have first consideration and the remedy is in its hands. We are interested to note that quite recently the suggestion has been made that motor-cars should be fitted with an automatic check by which it would be impossible to drive the car above a certain speed or else that a recorder should be attached to the car which would register the maximum speed attained, which could then be ascertained by the police. In connexion with this suggestion we may be pardoned for reproducing what we said in these columns eight years ago, at which time, we may add, our observations were received with not a little contumely. "We could wish," we wrote, "for some invention by means of which the speed of a motor-car could be automatically kept within legal bounds. Surely in these days of extraordinary engineering skill it would be possible to devise an arrangement attached to the axle of the car which would check the speed of the car as soon as it rose to a certain and dangerous point. The attachment of such an arrangement to a motor-car could be made compulsory and anyone found without such a method of control could be fined. We have no wish to interfere with any advance in locomotion, but this advance must not be made at the expense of the public safety." We are not sure that the revival of the old toll-gates in England would not be a great help towards suppressing motor offences. Taxes could there be collected and the dashing career of the runaways, if need be, could be stopped. A striking example should be made of the ruffians who, instead of rendering aid, ride away after having knocked somebody down.

Annotations.

"Ne quid nimis."

THE EMPLOYMENT OF WOMEN AFTER CHILD-BIRTH.

THE Research Committee of the Christian Social Union (London Branch) undertook in April, 1905, an inquiry into the employment of women after child-birth. The inquiry was confined to women engaged in household duties, home industries, or casual work such as charing, women regularly employed in factories or workshops being excluded. In the course of the inquiry investigations were made of some 1023 cases, representing altogether 4497 children. The questions were framed in such a manner as to supply information on three main points—namely, the date on which the mother returned to work after her confinement; the feeding of the child during the first 12 months of life; and where death of a child had taken place the cause of death together with a statement as to whether the child had been breast-fed, hand-fed, or partly breast-fed and partly hand-fed. Other points on which information was sought were whether the mother habitually worked up to the time of her confinement or not, and the causes which had led to her working in some paid employment. The conclusions arrived at by the committee are of importance and interest and are such as our knowledge of the conditions in which the majority of these mothers live would lead us to accept as correct. The investigations show that many of the women carry on their work right up to the time of their confinement and resume it afterwards in from 10 to 14 days. The numerous evils likely to result from such a course are well known to all practitioners and it is interesting to recall the researches carried out in this direction by Professor Pinard, who has shown by an investigation of some 4445 cases that in women who are able to rest for the last two or three months of their pregnancy the average weight of their children is greater by some 300 grammes, than is that of the children of women who are compelled to work up to the time of their confinement. The bad results which are likely to ensue to the mother when she is compelled to return to her work soon after her confinement are well known, and the bad results to the infants are strikingly shown by the investigations of the committee into the conditions of feeding in the children who died, for the mortality among the hand-fed children was 230 per 1000, as compared with a mortality of 145 per 1000 among the breast-fed children. These figures afford a very striking confirmation of the great importance of the mothers suckling their children, and the disastrous results of artificial feeding among the children of the poor. The danger to the infant which is entailed by the mother going out to work is also demonstrated by the death-rate among the children of those mothers who had other occupations than their household duties, which reached 194 per 1000 as compared with a death-rate of 126 per 1000 for the children who still had the benefit of their mothers' care. A further interesting point brought out is the rarity with which any provision seems to be made by the mothers for the proper care of their babies during their absence from their home at work, in most instances the child being left in the care of a neighbour or relative, and in comparatively few cases is it placed in a crêche. The time surely has come when something should be done to prevent pregnant women from working up to the very date of their confinement, since the evils which result from such a custom and the far greater evils which result from the fact that many of these unfortunate people have to resume hard work, often of a very trying character, within a very short time of their confinements is unfortunately well known to gynæcologists and general practitioners. In only too many cases the mother is the bread-winner for the whole family, and in these days of increasing unemployment the remedy for the sad state of things revealed in this report is difficult to see. The whole question is, however, one of very vital importance to the physical well-being of the nation, and it is encouraging to think that the resulting evils are now attracting the attention of others than factory inspectors and medical officers of health who for long have been acquainted with these and other evils consequent upon the employment of married and child-bearing women.

TENURE OF OFFICE OF MEDICAL OFFICERS OF HEALTH.

AT the end of May last, in replying to a question addressed to him by Mr. H. C. Brodie, the President of the Local Government Board, stated[1] that the question of the tenure of office of medical officers of health in England and Wales

[1] THE LANCET, June 6th, 1908, p. 1670.

was receiving his attention and that it was already the practice of the Board in suitable cases to recommend local authorities to appoint their medical officers of health permanently or for a lengthened period. It is gratifying to find that the Board has thus admitted in principle that lapsing appointments are undesirable and we are confident that it will receive the support of public opinion if it does more than merely recommend and if it insists upon medical officers of health being placed in an unassailable position so long as they carry out their duties in a proper and reasonable manner. We have been led to return to this question, which has been discussed over and over again in our columns, owing to the action of the Hereford town council on August 18th last, when electing as a whole-time medical officer of health Dr. J. W. Miller of Blackburn. A communication was read to the council from the Local Government Board suggesting that the appointment should be made without limit of time and that on receipt of the particulars of the appointment the Board would consider whether it should sanction it permanently or for a term of years. In spite of this very strong expression of opinion from the central authority the council decided to recommend that the appointment should be made for a term of five years, a course of action which it is hardly likely the Board will endorse without convincing reasons for its necessity.

THE PALATABLE BEVERAGE.

IT is idle to deny that a good many people often drink not because they are thirsty but because the beverage is palatable. Against such may fairly be brought the accusation of excess. The organism, as a rule, is not slow to indicate clearly its needs and when water is required the sensation of thirst is the tell-tale. When, therefore, a person drinks a beverage not because he is thirsty but because that beverage is palatable he is probably exceeding the liquid requirements of the physiological machine, and the normal course of metabolism may be interfered with by the superfluous fluid absorbed. The fact is that so many persons want to add to the delightful and perfectly natural sensation of assuaging thirst that of a condiment or something which pleases the palate also. If we are not mistaken this perverted instinct is responsible for a good deal of over-drinking and for a number of habits which do not contribute to the physiological well-being of the individual. The thirsty person who cannot satisfy his thirst unless the beverage contains what is in reality a drug has really acquired an unhealthy habit, or, to put it plainly, a disease. Yet what else is the alcohol of the various alcoholic beverages, the caffeine of tea and coffee, the glucoside or quinine of bitters, or even the ginger of ginger-beer or of ginger-ale, the aromatic oil of the liqueur, the carbonic acid gas in soda-water, the citric acid of the lemon, and so on, but a drug? All these when consumed clearly convey something into the organism over and above water itself; they cannot quench thirst in the sense that water does. Plain water has become a rare beverage nowadays and it is a pity that it is so. We are inclined to think that the prejudice against the drinking of plain water has arisen from a mistaken idea in the public mind that plain water has disease entities in it, or "insects," and that only when mixed with spirits, hops, malt, and other things, or in the form of tea or beer which necessarily are freed from disease organisms because they are boiled, is it rendered safe to drink. The danger of such an idea is apparent enough, for under stress of great thirst large doses of alcohol, tea, tannin, carbonic acid gas, bitters, and so on may be consumed, and the effects of an unduly prolonged course of drugs, such as in reality these are, sooner or later manifest themselves, frequently indicating a disturbance of function which in the long run may do serious harm to the whole organism. There are occasions, of course, when it is desirable to take with the beverage a stimulant or a substance which relieves fatigue, but for the purposes of satisfying a mere thirst pure water is all that is needed.

THE HYGIENIC CONDITION OF FRENCH FISHERMEN.

IN France the number of men who gain a more or less arduous livelihood by sea fishing is very great and in order to ameliorate their condition, moral as well as hygienic, the French Society of Hygiene, on the proposition of its honorary president, M. E. Cacheux, has decided to institute during the current year a competitive inquiry into their mode of life, each competitor being entitled to select for his disquisition the district with which he is best acquainted. The programme is divided into two parts: 1. Statistics referring to birth, death, and preventable disease; a description of some habitations, with their curtilages, in the occupation of fishermen; net cost of such a habitation; details having regard to water-supply, the utilisation of sewage, and the removal of rain and refuse water. 2. The steps that should be taken in order to improve the hygienic state of dwellings inhabited by the fishing population in villages, suburbs, and quarters by the creation of new quarters in the vicinity. This measure is urgently needed in crowded maritime towns, and more especially in those that still retain their ancient fortifications. Several prizes, including a gold medal of the value of 200 francs the gift of M. Cacheux, will be awarded to the successful contributors. All essays should be addressed before the end of the year to the Society of Hygiene, Rue Serpente, 28, Paris.

PARTIAL THYROIDECTOMY COMBINED WITH X RAY TREATMENT IN GRAVES'S DISEASE.

IT is now generally agreed that the group of symptoms called Graves's disease or Basedow's disease or exopthalmic goitre is caused by an excessive, and probably also an abnormal, secretion of the thyroid gland. Medicinal treatment is of little value and the natural treatment of such a condition would appear to be the removal of a portion of the gland so as to diminish the amount of thyroid secretion; that is the method advocated and practised by Professor Theodore Kocher, and as he has had undoubtedly the most extensive experience of disease of the thyroid gland, his opinion is of the greatest value. But even in his capable hands the death-rate of operation for exophthalmic goitre is over 4 per cent., and less experienced surgeons have had much less favourable statistics. Professor Carl Beck of New York has employed a modification which has yielded him good results, and he has published a short paper on the subject in the Post-Graduate Twenty-fifth Anniversary Volume, 1908; this paper is supplementary to an article which he published in the *Berliner Klinische Wochenschrift*, No. 20, 1905. Professor Beck looks upon the severe symptoms which often follow a thyroidectomy as the result of setting free a large quantity of thyroid secretion, and therefore he contented himself in some cases with removing a small portion of the enlarged gland, taking the greatest care not to apply force to the gland so as to squeeze out the secretion. He also determined to make use of the effect which the Roentgen rays have on the walls of blood-vessels. The rays cause the blood-vessels to contract and therefore Professor Beck exposed to the rays the remaining portion of the gland after partial excision and with the happiest results. In other cases no operation was performed but the patient was submitted to the action of the rays,

and much improvement followed in these also. Perfect recovery did not occur in every case, but there was always some improvement and in most cases the improvement was very marked. The rays are administered as follows: A tubular diaphragm is used and a current of large amperage employed, the focus tubes being soft. The exposures last five minutes and are repeated on every other day during the first week and on every third day during the following weeks until there is either a marked decrease in the swelling or an x-ray dermatitis. In most of the cases fairly large doses of liquor arsenicalis are given at the same time, up to 20 drops three times a day, provided the digestion is not disturbed. In slight cases Professor Beck recommends this treatment; for cases with more severe symptoms and a greater swelling he advises the combined method, partial excision followed by x ray treatment of the portion of gland left. For advanced cases where alarming symptoms forbid immediate operative interference the x ray treatment should precede the operation until improvement of the general condition occurs. Judging from this paper we cannot doubt that the use of x rays in exophthalmic goitre deserves an extensive trial.

INCUBATION, ANCIENT, MEDIÆVAL, AND MODERN.

THE diverting description of what may aptly be termed "sleeping in" at the temple of Asklepios at Athens which has amused the readers of the Plutus of Aristophanes for so many centuries is really an account of an "incubation" at the shrine of the god of healing of two patients, Plutus and Neocleides, the latter of whom failed to derive any benefit from the visit. The cure, as described by Plutus's servant Chremylos, appears to have been achieved by an Asklepiad priest assisted by two acolytes representing Iaso and Panakeia. For that the officiant was the beneficent deity in person is rendered extremely improbable by Chremylos detecting him abstracting the unconsumed cakes and comestibles from the altar and placing them in a bag for future consumption. He was, however, attended by two trained serpents, so that anyone suddenly awakened by his ministrations and mentally impressed by the sacred site and solemnity of the occasion, in the dim light of the sanctuary colonnade might deem his visitant to be the god himself. Like so much of the manners and customs of ancient Greece this system of semi-religious oneiromancy was common in Babylonia and Assyria, and also seems to have been prevalent in the Imhotep temples of Egypt. That Aristophanes has accurately depicted the story of a night's incubation and the good results of the experiment we know from records in the classics and the many thanksgiving inscriptions that have been recently recovered from the chief Asklepian shrines. The cure may not have been immediately vouchsafed, as in the case of a young Assyrian who "slept in" at the temple of Ægea for a long period, living there apparently *en pension*, for he had, we are told by Philostratus, plenty of good cheer. The dreams of the sick sleepers, however, more frequently resulted in the receipt of a prescription promising, if followed, to effect a cure than in the actual relief being afforded during the night, and it is the record of such recipes and their curative properties that form such interesting matter in the epigraphical texts of Epidauros and Athens. That the practice was of high antiquity among the Hellenes is proved by Homer's reference to the priests of Zeus at Dordona sleeping naked on the bare soil. Miss Mary Hamilton of St. Andrews has published a work treating of "Incubation; or, the Cure of Disease in Pagan Temples and in Christian Churches," which is important because it so clearly demonstrates the taking over of this Pagan practice by the later Christian churches at many sites. To those who know how early ecclesiastics secured the conversion of many simple worshippers of the old Pantheon by the easy process of canonising their deities this will cause no surprise. M. Goblet D'Alirella considers the great value of Miss Hamilton's work to consist in the proofs which she gives, not so much of the acceptance of the faith-healing practices of heathendom with all their essential concomitant rites, for this was known before, and had been fully treated of by French writers upon medicine and mythology, but in the evidence which she brings forward of the practice of incubation under similar conditions passing over from the temples of the gods to the sanctuaries of the saints at or near the same sacred sites. Thus at Byzantium incubation flourished at the temple of Castor and Pollux; a little later and we find it in vogue at the same place in the church of St. Coine and Damian, and tradition even asserts that so sudden was the transition that a patient coming for cure at the hands of the Dioscuri received the remedy from their saintly successors. The oneiromantic benefits procurable at the Asklepeia of Cos, Epidauros, Pergamos, Athens, Rome and elsewhere, or in the temples of Pluto, Dionysius, Isis, and Serapis at such places, are met with again in churches dedicated to St. Coine and Damian, Martin and Maximian, Therapion, St. John and Thecla, and scores of other apostles, saints, and martyrs. It must not be thought that these primitive practices only continued to flourish until the "Middle Ages." Incubation is still prevalent in parts of Greece and Italy with the tolerance and encouragement of the priests; and the presence of medical ex votos or models of the members healed as the result of offerings and prayers to Mary and the saints in hundreds of European, to say nothing of Latin-American churches, proves how widespread is the belief in the association of religion with medicine. The subject is one of entrancing interest in the history of humanity and will some day, we hope, be adequately treated by a scholar who will need to unite in himself the qualities of a competent physician and a devout theologian and to possess a commonsense knowledge of his fellow man. Meanwhile much may be learnt from the classical side in the article on Incubation in the Greek Dictionary of Greek and Roman Antiquities of Darenberg and Saglio and from the religious point of view from M. Albert Marignan's "La Médecine dans l'Eglise au VI. Siècle."

THE PRESERVATION OF BODIES FOR CORONERS' INQUESTS.

IN ordinary circumstances a coroner's inquest is held on a body from which life has departed but a short time previously to the holding of the inquest. But it often happens that an inquest has to be held on a body which has been found in the water and which has presumably been in the water for some weeks. In such circumstances putrefaction proceeds with great rapidity when the body, already partly decomposed, is removed from the water, and accordingly identification is rendered almost impossible. Dr. F. J. Waldo, the coroner for the City and for Southwark, has of late been trying to obtain the consent of the Common Council to the erection of a refrigerating mortuary, in which such bodies as those referred to above might be preserved during the time which must elapse between their finding and the inquest. The matter is under the consideration of the sanitary committee of the Common Council but at present no decisive steps have been taken. At an inquest held on July 4th in Southwark the jury requested Dr. Waldo to forward to the London County Council to the Local Government Board, and to the Home Secretary a resolution urging that Section 93 of the Public Health Act (London), 1891, should be put into practice which provides for "refrigerator" mortuary accommodation.

for unidentified bodies. Some means of preserving unidentified bodies from further decomposition is undoubtedly a necessity, but we are not so sure that the refrigerator mortuary is the best method of preservation. We draw the attention of Dr. Waldo and of the municipalities interested to an account which appeared in THE LANCET of Nov. 9th, 1901, p. 1279, of an apparatus in which the active preservative was formic aldehyde. The adoption of a refrigerating system implies machinery which would involve a question of cost. Modern refrigerating methods are, however, perfectly simple, the liquefaction and expansion of gases such as ammonia or carbonic acid gas supplying the necessary lowering of the temperature, and then a circulatory apparatus charged with brine or calcium chloride distributing the cold produced.

CONTRACT PRACTICE AMONGST THE WELL-TO-DO CLASSES.

Dr. K. Haanshus of Christiania, writing in a recent issue of *Tidaskraft for Den Norske Lægeforening*, urges upon the body of general practitioners the desirability of establishing a fixed and uniform annual fee which shall be paid to them by all families under their medical charge. He recommends this course both on behalf of medical men themselves and of their patients, for he says the status of the family practitioner is falling under the absurdly inadequate fees which he receives at present and which cheapens his reputation and professional worth. He quotes the case of one practitioner who received a yearly remuneration of about 11*s.* from a family of good standing. The consequence is that the "family doctor" is only called in to attend trifling disorders and the patient relies on his own diagnosis of more serious affections to select his own specialist. Not only is this disadvantageous to him but to his children also who during their growth can be benefited so greatly by the watchful care of a regular medical attendant. The family, in other words, loses what should be amongst the greatest benefits of modern medicine, skilled hygienic and prophylactic supervision, which could be obtained by the payment of a reasonable annual retaining fee to a practitioner. This Norwegian plea for reform further discusses the difficulties of fixing an equitable amount for such a fee and suggests that the principle adopted in Copenhagen of charging the householder 10 per cent. of his yearly rent in return for regular medical attendance during the year for himself and his family should be extended to Christiania. We are not informed as to whether this fee includes either attendance at confinements, or such operative procedures as the general practitioner usually undertakes, or the supply of drugs and appliances, but looking at the matter broadly it amounts to nothing but an elegant form of contract practice, such, we are glad to say, as has gained a very slight foothold in this country. It is true that a similar system has been adopted in India in the civil practice of officers of the Indian Medical Service, who are very generally paid by Government servants a fixed proportion of their pay for attendance on their wives and families. We believe that plan works well enough, but the conditions are far removed from those of civil medical practice in Europe. An Indian medical officer at any particular station is extremely unlikely to have a greater number of Europeans under his charge than he can look after properly. But applying the contract principle to an English town or district with a large population there is obviously an extreme temptation for a medical man to swell his income by undertaking the care of more families than he can possibly attend to in a satisfactory manner, especially in epidemic and other times of stress. His brother practitioner, with fewer patients, can give them much better attention, but being bound by the contract system his income must be proportionately less. In fact, the family medical man's position under such conditions would be summed up as more pay, less work, for the number of patients seen is hardly a criterion of work, if their examination is a mere hurried routine, and that state of affairs would not prove satisfactory with regard to the self-respect and ultimately the credit of the practitioner, the welfare of his patients, or the dignity of his profession. We have seen quite enough of the evils resulting from contract practice amongst the working classes and we are not anxious for its extension to other social spheres where it can quite well be avoided. The system prevailing in this country in dealing with the "middle and upper classes" is as suitable as any that we know of, and far more so than the principle of the retaining fee which would prove as unworkable as a rigid tariff scale. Even if it were adopted, to regulate it by the amount of the house rent would lead to obvious injustices on both sides of the contract. If a contract fee is to be adopted at all it should surely be based on the number of persons whom the contracting practitioner is liable to treat.

THE METROPOLITAN WATER-SUPPLY: THE IMPORTANCE OF INCREASED STORAGE ACCOMMODATION.

Dr. A. C. Houston's report summarising the results of the chemical and bacteriological examination of the London waters for the twelve months ending March 31st, 1908, was issued as an appendix to the reports of committees under the Metropolitan Water Board which were considered at the meeting of that body on July 17th. The lesson of the report may be summed up in one word—storage—as is shown most graphically in a table occurring on an early page, which illustrates the effect of the rainfall on the flow of the river Thames and the resultant effect on the quality of the river water above the Board's intakes, and indicates the need for judicious selection of *raw* water and provision for its adequate storage, so as to prevent the filtered water from being adversely affected during times of flood. We have repeatedly called attention to the need for such provision, and the table is so instructive in its bearing on the matter that we quote it in part:—

Month.	Rainfall (inches) Thames Valley.	Percentage number of samples of *raw* Thames water containing typical bacillus coli in:—			*Raw* Thames water. Oxygen absorbed from permanganate test (parts per 100,000).	*Raw* Thames water. Colour test (m.m. brown, 2 foot tube).
		1 c.c. (or less).	0·1 c.c. (or less).	0·01 c.c. (or less).		
1907.						
April	3·27	80·9	42·8	4·7	*0·2314*	74
May	2·32	*90·4*	42·8	*14·2*	0·2057	54
June	2·52	70·0	35·0	0·0	0·1998	45
July	2·46	65·2	13·0	0·0	0·1762	45
August... ...	2·11	75·0	30·0	5·0	0·1504	39
September ...	0·67	52·3	23·7	4·7	0·1128	34
October ...	5·80	*86·9*	*47·8*	4·3	0·2197	56
November ...	2·34	*90·4*	*57·1*	*14·3*	*0·3139*	*113*
December ...	4·03	*99·9*	*99·9*	*31·2*	*0·4756*	*239*
1908.						
January ...	1·63	*100·0*	*90·9*	*18·2*	*0·2355*	*77*
February ...	1·14	*100·0*	*50·0*	5·0	0·1313	53
March	3·25	*90·8*	40·8	*9·0*	*0·2545*	*104*
Averages ...	31·54 (sum)	83·2	46·8	8·8	0·2220	76

The figures in italics exceed their respective averages

Other columns in the original table record the average daily (natural) flow of the river Thames, the total number of bacteria per cubic centimetre in the raw Thames water, and the turbidity of the water in the successive months. These figures point to like conclusions. For instance, in August of last year the average daily flow was 428·4 millions of gallons, and in December it was 4093·5 millions of gallons; the total number of bacteria per cubic centimetre found in the raw water was 436 and 6710 in these two months respectively, and the ratio of the turbidity was 0·95 for August to 16·83 for December, figures which need no comment. We have already recorded the important research work on the effects of storage of raw water upon the vitality of the typhoid bacillus which has been carried out in the Board's laboratories during the year;[1] the present report shows that not only does storage effect a remarkable reduction in the number of bacteria of all sorts, both excremental and otherwise, but also a considerable reduction in the degree of turbidity and of hardness and in the amount of colour and oxidisable matter; it is indeed remarkable that "as judged by the bacillus coli test the Lee water *after* storage, but *before* filtration, was often purer than the *filtered* water from the Southwark and Vauxhall works. With regard to the presence of bacillus coli in the filtered waters from the different supply stations we read that "The 'best month' results were remarkably good"—in six cases 100 per cent. of first-class samples, i.e., samples containing no typical baccillus coli in 100 cubic centimetres of water were obtained—"but, with the exception of the East London (Lee) and Kempton Park, all the filtered water deteriorated to a striking and unsatisfactory extent in January as a result of the mid-December floods." In that month filtered water from the Lambeth and Southwark and Vauxhall supplies gave only 10·9 and 10·5 per cent. of first-class samples respectively. On the other hand, the average for the latter supply has improved to 67·2 per cent. for the 12 months under review from 47·6 per cent. for the 12 months previously, an improvement almost certainly due to the increased use of stored water in that system. In his general conclusions Dr. Houston points to the necessity for increased and more equal storage accommodation at the Board's different works, the unequal and in some cases too rapid filtration which occurs at them, the variable and sometimes unsatisfactory quality of the water as delivered to the consumers, and, most important of all, the remarkable percentage improvement in the quality of the raw water effected by storage and filtration. He is able, however, to draw attention to the satisfactory *average* quality of the metropolitan water-supply, and to add:

> Certain investigations carried out since last year tend to make one look with rather less disfavour than previously on the present sources of water-supply. In the first place the extreme difficulty experienced in isolating *fæcal* streptococci from one cubic centimetre of the raw waters is a point in their favour. Secondly, the fact that no typhoid bacilli have been found in the raw waters despite the use, for nearly a year, of the most recent and searching tests for this microbe, is a matter worth noting. Negative evidence, however, in experiments of this kind, is apt to be unconvincing; still it can be said with confidence, that the nature of the negative evidence which has been accumulated, is of a much less inconclusive character than any previously brought forward. These remarks, however, must not be read as implying that any relaxation in the existing processes of purification of the river water by means of storage and filtration is justifiable.

The report of the Water Examiner for April is also to hand. It shows the Thames water to have been in good condition on all but five days when it was more or less coloured and turbid. The number of filtered water samples giving first-class results with the bacillus coli tests was very satisfactory, being 94·0, 97·2, and 95·7 per cent. of samples taken from the Thames, Lee, and New River respectively. Further striking evidence is to hand as to the effect of simple storage on Lee water. Whereas 94 per cent. of samples of the raw water contained bacillus coli in one cubic centimetre (or less) of water only 34·9 per cent. of one cubic centimetre samples contained bacillus coli after simple storage without filtration.

[1] THE LANCET, July 25th, 1908, p. 255.

AN INTERNATIONAL INQUIRY INTO INSANITY IN PRISONS.

IN the *Revue de Psychiatrie* for February, 1908, Dr. F. Pactet publishes the results of an international inquiry as to the number of insane persons found in the prison population of various countries and notes the steps taken to discover the insane among the prisoners and to arrange for their disposal and treatment. The results which he established were: (*a*) That a definite percentage of prisoners are insane; (*b*) that such persons often remain in prison a considerable time before their mental condition is recognised; (*c*) that the ordinary medical service of the prisons is insufficient, owing to the absence of special training of the medical officers, for the early diagnosis of mental disease; and (*d*) that a system analogous to that established in Belgium in 1891, whereby a periodical inspection of the prisoners by alienists is carried out, is useful. The allegation has been frequently made that a large proportion of the persons undergoing legal detention in this country are really insane. It should be noted, however, that Mr. R. Brayn, medical superintendent of the State Criminal Lunatic Asylum at Broadmoor, is not of opinion that the prisons of this country inclose insane persons or that the diagnosis of insanity is overlooked with any frequency by the magistrates. Mr. Brayn is also satisfied that the medical service of the prisons is competent to detect cases of insanity when they do occur. Other distinguished psychologists do not share this view; for example, Dr. A. R. Urquhart, physician superintendent of the James Murray Royal Asylum at Perth, is an advocate for the adoption of the Belgian system, under which the prisons are periodically inspected by alienists appointed for the purpose, believing that the unsuspected insane are in fact to be found in the prisons.

THE HEALTH OF WARWICKSHIRE.

Dr. A. Bostock Hill's able and interesting report on the health of the county of Warwickshire is well worth the careful consideration of all who are interested in the health of the people. The report in some respects is perhaps rather optimistic; nevertheless, it shows that much good has resulted from past work and it suggests further hope for the future. It is by births and deaths that vitality and health are estimated, and of births and deaths Dr. Bostock Hill has much to say. Discussing the birth-rate of his district, he points out that it varies considerably, the highest urban rate being 37·2 in Bulkington, and the lowest 17·5 in Stratford-on-Avon. The highest rural birth-rate, 36·8, was in Foleshill, and the lowest, 12·6, in Coventry, whilst in both Farnborough and Monk's Kirby it was below 20. The average birth-rate for the county was 25·08, showing a fall of 0·62 as contrasted with the previous year, and being 1·22 less than the average for England and Wales. The fall of the birth-rate is to be regretted, but against it must be set the gain which has been made by the simultaneous reduction of the infantile mortality; this is stated as 99 per 1000, which contrasts very favourably with the 124 per 1000 of the previous year, and Dr. Bostock Hill points out that when the falling birth-rate and the infantile mortality rate are considered together there has been an actual gain to the county of 144 lives. Perhaps the most satisfactory part of the report is that which deals with these facts, and the part which raises hope for the future is the statement that the mothers, and particularly the younger mothers,

welcome the health visitors and do their best to carry out the instructions given to them.' The total death-rate for the district was 12·48 per 1000 as contrasted with 13·5 and 12·87 in the two previous years. In the urban districts Erdington had the lowest death-rate, 8·78 per 1000, and Bulkington the highest, 20·7. The zymotic death-rate was 0·84, the lowest yet recorded in the county, a distinct improvement upon the 1·49 of the previous year, due very largely to the diminution of diarrhœa.

THE RELATION OF THE PHARMACIST TO THE PHYSICIAN.

IN the July *Bulletin of the American Pharmaceutical Association* Dr. C. S. N. Hallberg deals in an interesting manner with the relation of the pharmacist to the physician. Dealing first with the prescription he points out that many physicians have ceased to write prescriptions, partly owing to the common practice among patients of handing their prescriptions to their friends. A prescription is designed only for a particular person for a particular period and should not be regarded as a common recipe. According to a declaration formulated by a joint committee of physicians and pharmacists at Chicago a prescription is an utterance of the prescriber who alone should direct and control its employment. It should, whenever practicable, bear the name of the patient, the age, if a minor, and the date when written. It should be retained by the pharmacist as a record for not less than five years, for the protection of the prescriber, the pharmacist, and the patient. It should not be dispensed more than once if the prescriber signifies that it is not to be repeated ("N. rep."), if it contains narcotic or habit-forming drugs, or if asked for by any other person than the original patient. These requirements are exceedingly reasonable and have been approved by several medical societies. The recommendation of medicines by the pharmacist furnishes a fruitful source of trouble between him and the physician. Theoretically the pharmacist should not recommend any medicines but should suggest that his patrons should seek the advice of a physician. The pharmacist has no right to diagnose, and herein lies a valuable guiding principle which admits of general application. Dr. Hallberg suggests that the pharmacist should never recommend patent medicines or display them, but whether he should refuse to supply them on demand must be left to individual judgment. His refusal would be rendered more easily possible if physicians through their societies would resolve to give preference to those pharmacists who do not keep patent medicines at all. To meet the popular demand for domestic medicines it has been suggested that a list of official articles should be selected by the joint medical and pharmaceutical societies, such articles to be supplied with suitable labels. Dr. Hallberg's observations are largely applicable to all countries where the English tongue is used. In many continental countries the pharmacist is bound to observe a rigid code of ethics and in some of these countries care is taken to regulate the number of pharmacies, so that it is possible for the rules to be carried out and at the same time the pharmacist is able to conduct the business with profit.

FOOD POISONING AT ST. ANNE'S-ON-THE-SEA.

WE have received from Mr. Edward Sergeant, the medical officer of health of the county palatine of Lancaster, a copy of his report on the outbreak of food poisoning which occurred early in July last in the urban district of St. Anne's-on-the-Sea. Investigation showed that altogether there were 76 cases of poisoning, and without exception the cause of illness was attributable to either potted beef or pork pies. 34 cases of illness due to the potted meat came under observation and 42 attacks were traceable to pork pies. Three deaths occurred, two of which were attributed to potted meat and one to pork pie. The fatal cases exhibited the following symptoms. The food was consumed about 8 or 9 in the evening. The patients commenced to be ill with pain in the stomach, vomiting, and diarrhœa about 1 o'clock next morning. Death from syncope took place six days after the meat was eaten. There could be little doubt that both the potted meat and the pork pie had established some kind of bacterial poisoning—a conclusion, at all events, which was borne out by the bacteriological investigations made by Professor S. Delépine. The bacillus obtained from the pie when mixed with the food of a guinea-pig caused the infection and death of that animal. Inoculation with cultures of the bacillus obtained from one fatal case and also from the potted meat produced infection and death in two or three days. The blood of other patients gave the characteristic reaction indicating that they had been infected by the same bacillus. The outbreak appears, therefore, to have been due to a bacillus which had most of the characters of the bacillus enteritidis of Gaertner, which is similar to the organisms which have been found in food causing analogous poisonous symptoms in previous outbreaks. There was evidence also that the blood of some of the bakehouse employees had been similarly infected. The insanitary surroundings in which the bakehouse was found further suggests that the *fons et origo mali* was the intestinal organism. There can be little doubt that an efficient sanitary condition in places where food is prepared and cooked is of the utmost importance to the health of the public, especially as it has been shown that even in the process of cooking some pathogenic organisms may survive owing to the temperature not having completely penetrated the mass.

WE regret to announce the death of Sir Charles Gage Brown, K.C.M.G., M.D., which took place on Thursday, August 13th, at Wreningham Rectory, Norwich. Sir Charles Gage Brown, who was for many years physician and medical adviser to the Colonial Office and to the Crown Agents for the Colonies, and who on occasions gave counsel also to the Foreign Office and Audit Office, had reached the age of 82 years.

Dr. Lucas-Championnière, consulting surgeon to the Hôtel-Dieu, Paris, and senior surgeon at the Beaujon Hospital, attended at the Royal College of Surgeons of England on Tuesday last and signed the roll of Honorary Fellows in pursuance of his election by the Council.

Dr. W. H. Willcox, assistant physician to St. Mary's Hospital, has been appointed to the post of Senior Scientific Analyst to the Home Office in succession to the late Sir Thomas Stevenson.

READING PATHOLOGICAL SOCIETY.—At a recent meeting of this society the following were elected officers for the new—i.e., the seventy-eighth—session: President, Dr. Jamieson B. Hurry; honorary librarian, Dr. Francis H. Hawkins; honorary curator, Dr. H. M. Clarke; and honorary secretaries, Mr. N. B. Clowes and Dr. W. B. Secretan. For many years it has been the custom of the society to inaugurate the session by an oration, which will on this occasion be delivered by Dr. F. W. Andrewes, pathologist to St. Bartholomew's Hospital, subject, "The Treatment of Infectious Conditions by Vaccines." After the oration the annual dinner of the society will be held.

MOTORING NOTES.

BY C. T. W. HIRSCH, M.R.C.S. ENG., L.R.C.P. LOND.

A LARGE number of the profession are, from the many letters I receive, I know anxious to find a small car, a two-seater, with which they can do their work, and one that without much trouble they can look after themselves. They wish to use it as well for holiday jaunts in the summer when the visiting list is not heavy and the desire arises to refresh the soul and purify the mind by trips to picturesque old-world villages and places where nature sits beside the hidden stream. With a little car this can be done without much expense. Quite recently I noticed in the *Royal Automobile Club Journal* a letter from a country parson stating that £13 had covered the whole expenses of a low powered two-seater for a year, during which he had done over 1500 miles; and I know of a good many medical men who have covered a much larger mileage, and including £5 for interest on capital invested, £5 for insurance, £10 for tyres, and £15 for repairs, petrol, lubricating oil, and paraffin and carbide for lamps, the whole excluding cleaning—that is, wage of lad for washing the car—they have done this for three years at a cost not exceeding on an average £35 a year, and this includes new tyres, and for the first year it was much less. And some men I know have done all the cleaning themselves, while others, though doing all the adjustments, have had the car-washing done by their surgery boy.

One of the most popular cars that come under this category is the 6 h.-p. Rover, a car manufactured by the Rover Company of Meteor Works, Coventry, which can be seen at the London depôt, 59–61, New Oxford-street, W. The car has made many recent public performances, which include the winning of the Yorkshire Automobile Club hill climb, the first place at the New Forest hill climb at Beaulieu, the silver medal for the 12 hours' reliability test, the Gaillon hill climb in France, &c., and all this has made it one frequently thought of by medical men in search of their first mechanical mount, so it was with great pleasure that I accepted the offer of their London manager to make use of their standard 100-guinea car for a morning's round and to see for myself how it could climb. The length over all is 9½ feet, while the width is 4 feet 8 inches, which makes the car most easy to handle and turn about—important points in a carriage for a practitioner who may have to go up narrow lanes and byways. The body is roomy and has two seats, nicely upholstered. In the 100-guinea type wire wheels are fitted but artillery wheels are supplied with the more expensive model. The car sent to me was especially made for the profession and had an excellent Cape-cart hood and screen, and as the actuating levers are all on the steering pillar, though the weather was most unpropitious, I was able to drive without getting in any way wet, and stepped out of the car at my patient's house in as presentable a condition as if I had been driven there in a brougham, the only difference being that I was taken there at about three times the speed of a horse-drawn vehicle. The springing is excellent and though the length is small I was unable to detect any vibration, weighty matter for a carriage in which one may have to spend from six to eight hours every day of one's life. The springs, too, act as radius rods, a very simple attachment permitting of a slight movement. The engine has a bore of 97 mm. and a stroke of 110 mm., the crank shaft is solid, and the inlet and exhaust valves are both operated off cams. A cross-piece, held by a single nut on a central stud, keeps the inlet and exhaust pipes in contact with the side of the combustion head, copper and asbestos washers making the joints gas-proof. The sparking-plug is in an excellent position right over the inlet valve, and there is a cap over the exhaust valve which can be tapped to take an extra sparking-plug, should magneto-ignition be fitted as a stand-by, which I strongly recommend. The piston has four rings, two in a groove, and the connecting-rod is attached to it by a tapered gudgeon-pin held in bosses formed in the casting on the interior, and small screws prevent any possible lateral movement of the pin, which is also, of course, a "drive fit." A plate over the cylinder casting, which is held in position by nuts, can be removed for the purpose of cleaning the water-jacket. This I know to be a great boon. On cars I have had the cylinder and water jacket have been cast in one, and as in my early days I did not use distilled water incrustations would form, and they were a trouble to clear out; with this removeable cover it can be done at once, while if distilled water only be employed deposits cannot form. The commutator is of the external wipe kind and by means of spur gearing it is brought up to a level with the crank case, which is certainly an advantage, as it makes it easy to get at. This way of firing the mixture answers exceedingly well, only, as in all motor matters, it needs occasional adjustment; if a ridge or groove wears on the fibre, in front of the metal contact, when the engine is running quickly, it may miss fire; this can be avoided by seeing that the wheel is true, and it may require spinning in the lathe. It is also a good plan to carry a spare wipe; the ends are hardened; still flats do form and cause poor contact; it is impossible to file them true on the road; with a grindstone it is even a bother, and as they only cost a few pence I strongly commend the inclusion of one in the tool kit. Unlike most cars the coil is not carried on the dash; it is not an ornament there, so I rather approve the Rover plan of putting the coil in the accumulator box on the step. The objection is the added length to the high tension wire, but it is well insulated and not in a position likely to chafe, so the fear of "shorts" may be, I think, dismissed. The clutch is a metal to metal one of the disc variety and runs in oil; it is certainly very smooth, and even on a hill when let in rather hurriedly there was not a trace of a jerk. Three forward gears and a reverse are fitted; they are of the "Panhard" type, but the first motion shaft is in two, and on top gear a dog clutch makes the two solid and the drive is direct to the live axle. The gear box and crank case are in one casting and there is one universal joint between the gear box and back axle; the casing of the cardan shaft acts as a torque rod. Neither mechanical nor pressure lubricators are used; the usual drips on the dash are conspicuous by their absence; in their place there is a well near the crank case, whence the engine, clutch, and gears are automatically lubricated by gravity, the fly-wheel returning to the reservoir any excess of oil. The carburettor is one of the strong points of this car, which by means of a floating piston with ports allows more air to pass as the speed of the engine increases, or the throttle is opened up; and the control works in conjunction with the contact maker and is actuated by one lever on the steering column. The jet can be easily taken out for cleaning, but this should seldom be needful as a gauze strainer washer is fitted in the petrol supply pipe. Of course, the strainer has its disadvantages, for it may become choked by dust; still it is but a moment's work to remove and to clean it, and though on the Rover the jet can easily be reached on some cars it is a fiddling back-aching job. The cooling is by radiators with a fan, driven off the engine shaft at the back, and a centrifugal pump maintains the water in circulation. The brakes consist of two; one, worked when the clutch pedal is pushed right forward, acts on a drum fixed to the cardan shaft, the other acts on drums on the back wheels and is operated by a foot pedal, which by a pawl can be fixed to a small ratchet, which for the use of the medical profession seems an improvement on those worked by a side lever.

I made use of the car for an ordinary round and especially noted the behaviour of the engine, clutch, gears, and the springing. As the fly-wheel is an especially heavy one, I found that the engine ran slowly and quietly when standing idle, and retarded; on letting in the clutch she drew well, and on a bad hill she started off without any jerk on the second speed, and climbed an ascent of one in six, which was approached by a back turn and so could not be rushed, on the low gear without any trouble; there was no knocking or no groaning, and she went up quite easily. So many cars in the earlier days were guaranteed to mount such roads, and 'tis true they did, but oh, it was a slow moaning triumph; not so this little Rover—she really ran up without any grumbling. I also tried her on the flat, and when the engine was accelerated I do not think that she was far off 30 miles an hour. The control is really delightful: from a crawl, in a few lengths the car, without a jerk, could do a good 20 miles, and the clutch when slipped picked up smoothly, and still when home had a good hold. The steering, too, at all speeds was easy and steady. The brakes, both the one on the gear shaft and those on the wheel drums, separately held the car, in both directions, on a hill of 1 in 6, and that is a good test. As a result of my test I am of opinion that the

Rover is an ideal car for a doctor, especially if fitted with artillery wheels, heavy tyres, and a Cape cart hood and a front mica curtain. In fact, I was so impressed with her that if I had not three others I should be strongly tempted to invest in one.

A good many motorists have asked me regarding insurance. Well, if they drive themselves I think that they could take the risk of damaging their own machine, but if they injure a human being, even though it be not their fault, they might be liable, for claims I strongly recommend covering third-party risks for, say, £500 for any one accident and without limits as to the number. Personally, I am glad to say that I have not had in my ten years more than one claim made against me and that was before I was insured, and I manged to square it for £1. Quite recently I had under me a couple of costermongers in the local cottage hospital who had been knocked down by a car on Shooter's Hill, and I believe the driver was grateful when he settled the claim at about £200. A recent case at Chislehurst shows how some of the public will try to bleed motorists. In the case in question the driver by his careful steering managed to go between a costermonger's barrow and a van without touching either. Still, the costermonger brought a case in the Bromley county court for personal and material damages. Luckily in this instance the owner was able to produce evidence that there had been no collision and that the plaintiff had not been "hurled" by the car against an iron fence and the judge in giving judgment for the defendant said that it was a trumped-up case. Still, if the owner had been alone he might not have been able to rebut the claim, and a sympathetic jury might have awarded substantial damages, so even this case shows how essential it is to cover third party risks.

However good springs may be they may as a result of bad roads and sudden jars fracture. Last year I had this experience and luckily I had a couple of small clamps in my tool kit and so was able to get home with one tyre lever above and one below the injured spring; still, it was but a chance that I was able to apply this temporary "first aid," so I welcome a little novelty which has just been put on the market. It is the Triumph spring repairer. It consists of a forged plate and a pair of adjustable clamps by means of which the plate can be attached over any broken spring in a very short space of time. For our profession, to whom a cracked spring might mean an unpleasant delay, this seems a most useful addition to the tool kit. And speaking of tool kits reminds me of a most useful arrangement for carrying tools which was recently described in the *Autocar*. The idea consists in first separating the upholstery from the woodwork over one of the car's side doors; a tool-carrying strip with loops is then fitted and in each loop a tool can be carried and the upholstery can be replaced so as to form a flap to cover all over. Beneath the row of tools pockets can be made to carry "spares," &c. The advantage is that when a tool or "spare" is needed it can be found at once without even having to undo a roll.

Seemingly there is now on the market a more than usual number of second-hand powerful cars, automobiles of 20 h.-p. and more, and as the price is low many medical men may be tempted to invest, for as a colleague remarked to me recently, "Look at the price and the extra horse-power." I admit that many second-hand cars advertised are bargains and that they are in a very good condition, but I seriously question if they are bargains for general practitioners who need a car for daily use in their work. Will the extra power be of service to them? Rather will not this extra power be a continual unnecessary additional expense? A second-hand high-powered car may be the thing for, say, a commercial traveller who has to travel long distances and to take with him half a ton or so of samples, but a medical man needs but a small bag. A high-powered machine means a heavy one and likewise a heavy tyre and petrol bill, every patient visited means a stop and a start, and each stop and start means wear of tyres and machinery, wear which is needless, for it would not occur with a light car. So though the cost of a new light two-seater may be as much or may be more than the price of a really good open-to-all-inspection second-hand 20 or 30 h.-p., I am sure the embryo medical motorists will find it much cheaper to invest in a new light two-seater. Personally, I was always hankering after a four-cylinder with a roomy body. Well, I have now got one, though few of my friends or patients know that I have, as I merely use it for holiday touring. My nearly five-year-old little 6 h.-p. Wolseley still takes me on my round and, what is more, in spite of its noise and age it carries me round nearly as quickly and for less than one-fourth the cost that my 18–24 h.-p. would. From actual experience I know that the extra power and weight mean an enormous addition to tyre and petrol bills, with, anyway in a town and to a law-abiding citizen, no extra saving of time or even any additional speed. So if I may advise I should recommend all medical men to begin with a light two-seater instead of a heavy, though cheap, second-hand high-powered machine.

REPORT OF THE GROUSE DISEASE ENQUIRY COMMITTEE.

THE interim report of the Grouse Disease Enquiry Committee has now been published and furnishes most interesting reading, not only to the sportsman but also to those who look upon the more scientific aspect of the work that it has accomplished. The Committee, under the chairmanship of Lord Lovat, with Mr. A. S. Leslie as secretary, was appointed by Lord Onslow in 1905, and consisted of a number of gentlemen acquainted with the management of grouse moors who not only had knowledge of the natural conditions affecting the health of grouse but who could put the experts employed by the Committee in touch with those in actual charge of the moors and so arrange for the organisation of information and for the investigation of grouse disease, if any occurred, upon the spot.

Before the appointment of this Committee, with the exception of the work done by Professor Klein at the instance of the *Field*, no ordered inquiry or no inquiry based on any systematic policy of scientific research has ever been attempted, though many independent observers have recorded their individual observations and opinions upon the subject of what has been called grouse disease. The report points out that according to the earlier investigators certain pathological lesions were usually associated with the disease. The present inquiry has not wholly confirmed those results and the question still arises whether there may not be two forms of grouse disease, which, for the sake of convenience, may be spoken of as the chronic and the acute.

1. The chronic form may be described as a wasting and usually fatal illness, in which the parasitic worms—found in all red grouse—are, apparently through the lowering of the resistance by outside agency, given opportunity to work hurtfully on the bird's health. The characteristics given are: (1) loss of weight; (2) redness and congestion of the inner surface of the cæca; and (3) irregular moult and slow feather replacement, resulting often in bare legs and dingy plumage. In the earlier stages the bird becomes less vigorous, its habitat is changed from the heather to the green or lower grounds, and loss of weight continues until the bird dies. Post-mortem examination discloses the nematode worm Trichostrongylus pergracilis crowded in the cæca, and this part of the gut is, as a rule, in a state of intense redness and congestion. It is pointed out that though this form of the disease may not be infectious it is often locally severe when contributory causes have lowered the power of resistance of birds over a specified area.

2. The acute form of the disease, which was described by Professor Klein who considered it to be an acute infectious pneumonia caused by an organism probably belonging to the "colon" group and found chiefly in the lungs. The outward signs of this disease are said to be that the birds die in full plumage without loss of weight; that the course of the disease is rapid and its action locally severe. The post-mortem changes are described by Professor Klein in his book "Grouse Disease" as congestion of one or both lungs, comparable with the red hepatisation of true pneumonia; the liver, spleen, kidneys, and intestines are congested and present signs of an acute and rapidly fatal fever. Keepers also, almost without exception, testify to a disease in which birds die rapidly without loss of weight.

Unfortunately for the purposes of this investigation, but fortunately for sportsmen, no instance of this form of disease

as come under the notice of the Committee during the years 1905, 1906, and 1907, notwithstanding the large number of correspondents and keepers who have helped them in their work. The bacteriological work was intrusted to Dr. C. G. Seligmann; he had to leave for Ceylon during the past winter, but the work has been carried on by Dr. Louis Cobbett and Dr. Graham Smith.

Good work has been done in the investigation of the chronic form of the disease and the pathological symptoms of those birds that have been found dead or dying on the moors have been carefully recorded. It is, of course, impossible to give final results in an interim report, while the subject of inquiry is still under investigation. Even if what may at first appear to be final results have been arrived at they could not be published before the finished report appears in order to give ample time for verification. But there is reason to believe that the committee may have already discovered more than they at present think themselves justified in placing before the public without being satisfied that those results are correct. The bacteriological research has been hampered by no case of the acute disease having been noticed during the last three years. But investigation has shown (1) that Professor Klein's organism belonged to the widely distributed colon group, and according to the limited cultural and morphological tests then used differed in no way from other organisms of the colon group found in the grouse; and (2) members of the colon group, apparently culturally and morphologically identical with Professor Klein's organism, can be isolated from the heart, blood, lungs, and liver of both healthy and emaciated grouse that have been dead for a period of from 12 to 24 hours, the actual time varying with such factors as temperature and moisture.

The examination and the pathology of the birds dying from the chronic form of the disease has engaged and is still engaging the careful attention of the committee, as is also the manner in which the disease is believed to be spread. This work has been the care of Dr. A. E. Shipley, F.R.S., and Dr. E. A. Wilson, and in their appendices to the report a fuller description of the work done will be found than would come within the scope of this article. Dr. Wilson deals at first with the life-history of the grouse and describes the different variations in the plumage of the bird according to its geographical distribution, the moulting of the two sexes at different periods of the year, and the various plants and seeds eaten by the grouse. Dr. Wilson has had opportunities of examining many hundreds of grouse shot at all times of the day and is therefore able to go a long way towards settling the vexed question as to whether grouse feed all day or only towards evening, his evidence being in favour of the former theory. The whole of Dr. Wilson's work is not yet published, but anyone who reads the report will see from his published tables what a vast amount of ground has been covered by him

Dr. Shipley's paper is very interesting and deals with both the entozoal parasites and the ectoparasites of the grouse. He enumerates and describes the insects, flies, ticks, and mites found on the grouse. He also describes the worms found in grouse, both cestodes and nematodes, especially the Trichostrongylus pergracilis, the worm to which Dr. Cobbold attributed the mortality in grouse as far back as 1873. A great deal of combined work has been done by Dr. Shipley and Dr. Wilson and Mr. J. C. Fryer searching for the intermediate hosts of the parasites that infest grouse, but unfortunately up to the present no definite results have been obtained.

A paper is added by Mr. H. Hammond Smith describing the work carried out on the experimental area in Surrey, where grouse have been kept not only in health but where the committee have been able to hatch, and it is hoped will be able to rear, birds bred under very artificial conditions. With this paper is published an account of a collection of the grits found in gizzards of game birds, made by Mr. Hammond Smith, and this is accompanied by a valuable report on their petrology by Mr. R. H. Rastall of Christ's College, Cambridge. At present the investigation is not complete but is being diligently carried on; but as the secretary in his report points out funds are urgently needed to bring the work to a successful termination. No help is given from public funds and all the money expended has been found by those who are specially interested in the subject. But the matter is one of such general importance to the public that there should be a generous response to the appeal made for help in the secretary's report.

OCCUPATIONAL MORTALITY.[1]

III.[2]

EVEN a cursory reading of those portions of Dr. Tatham's report which have already been reviewed in THE LANCET will suffice to show that a large proportion of the loss of life sustained by industrial workers is due to a group of conditions which, although etiologically dissimilar, have unavoidably been grouped together for present purposes under the head of "pulmonary disease," because of the impracticability of discriminating among the various types of such conditions, and, in particular, of distinguishing tuberculous from non-tuberculous affections of the lungs.

From the point of view of the public health it is important that special preventive measures should be applied to those occupations in which these diseases, or either of them, cause exceptional fatality. Reference to the tables in this report shows that pulmonary tuberculosis and diseases of the respiratory system, taken together, account on the average for more than a third part of the total mortality of men in the main working time of life, and that, as will hereafter appear, the proportion in some industries is much greater than this. That pulmonary diseases as here defined are largely preventable may be gathered from the fact that the mortality occurring therefrom has fallen very substantially in recent years. That this is the case may be seen by reference to the successive reports of the Registrar-General during the last quarter of a century, and there is little doubt that the saving of life thus secured is the direct result of sanitary improvement generally and especially of the amendment of the conditions of labour which has been brought about by factory legislation.

In the present report there appears a section in which account is given of an attempt to ascertain the effect of continuous labour under adverse sanitary conditions of various kinds. In the first place, the injurious effects are set forth of inhaling an atmosphere laden with irritating particles of dust or otherwise seriously contaminated, "pulmonary disease" having been chosen as the criterion of the relative degrees of unhealthiness suffered by the workers in those industries that are specially prejudicial to health. Before entering into details on this subject Dr. Tatham invites attention to some of the difficulties that apparently are inseparable from investigations of this kind. Prominent among these is the difficulty of apportioning to each cause its true share in producing the aggregate of ill health and loss of life in a given industry.

As regards the stated causes of death, certain inaccuracies are known to exist in the registers which impair the value of occupational statistics. It must be remembered, in the first place, that medical certificates are available respecting only a portion of the recorded deaths, about 6 per cent. of them being registered on the authority of coroners and an additional 2 per cent. being uncertified; secondly, that in the compilation of vital statistics only one cause can be tabulated respecting each death; and thirdly, that even in cases where a medical certificate has been obtained the language therein employed does not always determine the etiology of the condition causing death. As regards the inquiry in hand, it is obviously necessary to know how much of the loss of life referred to diseases of the lungs depends on tuberculous infection, and yet on this important point the information derivable from the death certificates is in great part defective. Whilst duly appreciative of the great improvement that has recently taken place in the certification of causes of death, Dr. Tatham is still confronted with the difficulty of classifying deaths which are referred to such conditions as "abscess of the lungs," "congestion of the lungs," "pleurisy," "hæmoptysis," or to other indefinitely described lung diseases. From inquiries addressed to medical practitioners he learns that a considerable number of the deaths so returned are tuberculous in origin, although the original medical certificates had contained no intimation of the fact. The appendix to this report contains a table in which the chief industries are arranged in graduated lists with reference to their mortality from "pulmonary disease" and also

[1] Letter to the Registrar-General on the Mortality in Certain Occupations in the Three Years 1900, 1901, 1902. By John Tatham, M.A., M.D., Fellow of the Royal College of Physicians. Darling and Sons. 1908.

[2] Previous notices of this report appeared in THE LANCET of August 8th, p. 408, and 15th, p. 497.

a series of tables in which the mortality of the several workers is compared with that of agriculturists taken as a standard. The mortality from phthisis is shown separately from that attributed to other diseases of the respiratory organs, but the mortality from both causes together is also given for each occupation in proportion to that of agriculturists, the latter being taken as 100. One of these tables contains a list of 35 industries in which the workers suffer more or less seriously from inhaling particles of dust. At the bottom of this list there are five industries —viz., file-makers, potters, cutlers, copper-miners, and tin-miners—in which the combined mortality from phthisis and respiratory diseases is from four times to nearly ten times as high as that of agriculturists. It is impossible to determine how much of this excess is caused by a dusty atmosphere and how much by other unhealthy conditions in the workrooms; but it is noteworthy that in 1900–02 also these five industries had occupied similarly unfavourable positions in the scale of dust-producing occupations. Ironstone-miners, carpenters, and coal-miners appear to suffer less severely than the above from pulmonary disease, their mortality figure exceeding that of agriculturists by not more than from 56 to 67 per cent. Agriculturists experience almost the same rate of mortality from respiratory diseases as they do from tuberculous phthisis, but in the list just mentioned there are 18 occupations (nine of which are among the least healthy of the series) in which the workers sustain greater loss of life from tuberculous phthisis than from other diseases of the lungs. On the other hand, the list contains 17 occupations in which the loss of life from respiratory diseases is less than from tuberculous phthisis. Among these may be mentioned copper-miners, potters, copper-workers, manufacturers of iron, steel, and lead, coal-heavers, chemical manufacturers, and coal-miners—in all of which occupations the workers appear to die from non-tuberculous affections of the lungs much faster than from tuberculous phthisis. Within the last 20 years there has been a decline in phthisical mortality in all the occupations in the last-mentioned list except those of cutlers and tin-miners, and a decline in respiratory mortality in all occupations except those of tin-miners and Lancashire colliers. As already remarked, however, the figures for tin-miners must be used with caution owing to paucity of data. It is worthy of notice that the increase of mortality from tuberculous phthisis has in most cases been balanced by a corresponding decrease in mortality from respiratory diseases.

In yet another table a list is given of 19 industries in which the workers suffer in various degrees from breathing foul, though not necessarily dusty, air in the course of their employment. Among the workers included in this list 14 succumb to pulmonary disease more than twice as fast as do agriculturists generally, whilst general shopkeepers succumb to it nearly four times as fast. In the latter occupation the mortality from pulmonary disease is actually higher than that from all causes together among agriculturists. In almost all the occupations in this list the workers die from tuberculous phthisis more rapidly than from respiratory diseases other than phthisis; the excess of phthisical over respiratory mortality ranging from 13 per cent. in some occupations to 139 per cent. in others. The workers in this list who suffer most severely from pulmonary disease are general shopkeepers, whose mortality figure is 662, against 171 for agriculturists; hatters, whose mortality figure is 528, musicians 502, bookbinders 449, and printers and hairdressers 430. At the other end of the list come scientific instrument makers, drapers, and artists, whose mortality figure does not greatly exceed the average. Since 1890–92 the mortality from pulmonary disease has declined in each of these occupations except that of general shopkeepers, concerning whom there is some doubt as to the trustworthiness of the data.

In each of the two previous supplements investigation was made of the mortality due to lead poisoning in certain of the occupations in which the workers are brought into contact with lead. In the present supplement Dr. Tatham gives a list of 12 occupations in which the mortality from plumbism was double, or more than double, the average among occupied males in the aggregate. Cutlers and wool manufacturers, who were included in this group in 1890–92, do not appear in the present list, nor do lead-miners, although they obviously handle lead ore in the course of their work. In the following five industries the workers still suffer inordinately from lead poisoning. Taking the standard mortality as unity, leadworkers experience a mortality which is 103 times the standard; filemakers, 57 times; plumbers and painters, 22 times; potters, 9 times; and glass-workers, 8 times the standard. But high as these proportions are it is satisfactory to observe that they are now, with only one exception, much lower than those which prevailed ten years ago. The mortality from plumbism among plumbers and painters has shown no decline since the previous record. These trades are carried on for the most part by small employers, and the exercise of needful precaution against attack probably depends largely upon the care of individual workers, in spite of which the risk of lead poisoning has remained practically constant. On the other hand, the operations of glass and hardware making, lead-working, and file-cutting are conducted generally on a large scale under the supervision of the factory inspectors, and in each of these the reduction in mortality from plumbism has been remarkable, amounting to more than 50 per cent. in the case of lead-workers and potters.

In each of the two preceding supplements statistics were given of the mortality ascribed to alcoholism in the several occupations; although it has always been recognised that the mischief resulting from intemperance cannot be accurately gauged by the number of deaths directly attributed to alcoholism. The remarkable disparity observable in the fatality of alcoholism as compared with that of hepatic cirrhosis would seem to suggest that, in consideration for the feelings of relatives, medical attendants not infrequently state in their certificates only the pathological condition of the organs affected, without reference to the cause of such condition. It will hardly have escaped notice that among men-servants, for example, the mortality from alcoholism alone is higher by one-sixth part than among innkeepers, whereas the mortality from liver disease, chiefly cirrhosis, among the former is only one fourth part of that among the latter.

In a table in the present report a list is given of the occupations in which the workers appear to be most seriously addicted to intemperance, as proved by their mortality from alcoholism and liver disease combined; additional columns are also given showing the mortality from other affections most commonly associated with alcoholism, such as diseases of the nervous system, phthisis, and gout. The mortality of all occupied and retired males being taken as a standard, the table shows that innkeepers and their servants, costermongers, dock labourers, and chimney sweeps die of alcoholism at a rate which is from three times to more than eight times as high as that standard; and further, that in addition to these there are 14 other occupations in which the mortality from alcoholism is very seriously in excess. Comparison of this table with the corresponding table in the preceding supplement reveals the fact that with a single exception all those occupations in which the workers appeared from the earlier records to be addicted to alcoholic excess are included in the present table also.

The practicability of investigating the question of occupational mortality among women industrially employed was seriously considered in the General Register Office so long ago as the year 1890, but the attempt on that occasion had to be abandoned because of the uncertainty attaching to the statement of female occupations, both in the census returns and in the death registers. It frequently happens that the industrial occupation of a woman is only temporary and ceases at marriage, so that any injurious effect of occupation would hardly be felt by her so acutely as it would be by a man. Since the date referred to evidence of inaccuracies and omissions in the returns both of the living and the dead among women has accumulated so fast that no reliance can be placed on them for statistical purposes. The following instance may be taken as a type of the kind of inaccuracy to be found in the records. A. B. is a domestic servant—say, the daughter of a bricklayer living in the country. The girl cannot remain at service in town because of her inability to discharge her duties. She develops tuberculous phthisis and returns to her father's house permanently invalided. She is thenceforward regarded as unoccupied, and in the event of decease her death will be recorded as that of a bricklayer's daughter, no mention being made of her previous occupation. In the case of a married woman there would be a similar inaccuracy in the records, the deceased woman

being described simply as a wife or widow, with mention of her husband's occupation but without mention of her own.

In making preparations for the present supplement it was decided to make another attempt to investigate the question of female occupational mortality. But although much labour has been devoted to the subject, including the critical examination of the particulars of more than half a million female deaths, the attempt has again proved fruitless, mainly for the reasons above alluded to. It is hoped, however, that the instructions under which the registrars now work will produce more trustworthy records of occupation, and that it will be possible in 1910–12 to produce more accurate statistics as to female occupational mortality than has been possible on the present occasion.

Looking Back.

FROM

THE LANCET, *SATURDAY*, August 21st, 1830.

Edinburgh Medical and Surgical Journal.

(Concluded.)

The following notice is so extremely interesting that we shall quote it at length; it exemplifies admirably the valuable assistance which chemistry affords in the development of medico-legal investigations. Had the accident occurred before Orfila reduced toxicology to a science, it is more than probable, that the unfortunate pastrycook would have been condemned as a felon and sent to the guillotine. The statement of the case and the chemical evidence are worthy of the deepest consideration, and afford to the medical world a practical lesson of the most valuable kind.

ON THE POISONOUS EFFECTS OF CERTAIN SPOILED ARTICLES OF FOOD.

It is well known that certain articles of food have been frequently observed on the Continent to acquire poisonous qualities of a peculiar kind, and in a way which chemists and physicians have not hitherto been able to explain very satisfactorily. Among these articles the most frequent are a peculiar variety of sausage, and a particular kind of cheese used in Germany; but both in France and Germany, bacon and ham have been also several times found to acquire poisonous qualities analogous to those which characterise the sausage-poison and cheese-poison. A very elaborate inquiry into an accident supposed to have arisen from spoiled ham has just been published by M. Ollivier in the Archives Générales de Médecine. His investigations set completely at rest the common notion that such cases arise from the accidental impregnation of the meat with metallic poisons; but he has not succeeded in discovering the real cause.

In the instance which gave rise to his investigation, the master of a family purchased a ham-pie at a pastry-cook's in Paris, and the whole family ate the meat of the pie the same day, and the crust on the following day. Three hours after dinner the master of the house was seized with general uneasiness, followed by cold sweats, shivering, violent pain in the stomach, and frequent vomiting; then with burning thirst, extreme tenderness of the belly, so that the weight of the bed-clothes could scarcely be borne, profuse purging, and colic of extreme violence. His daughter, twenty-seven years of age, and a child nine years old, were similarly attacked. A physician, who was called to their assistance soon after they were taken ill, drew up a minute report of the symptoms in each of his patients, and declared that they had a violent inflammation of the stomach, which he was inclined to ascribe to natural verdigris, or the carbonate of copper having been communicated by the pastry-cook's moulds. In a few days all the three individuals recovered under an antiphlogistic treatment. About the same period several accidents of the like nature occurred among the customers of this pastry-cook; and, in consequence, a judicial investigation was ordered. The shop being properly inspected, it was found that every operation was conducted with due attention to cleanliness. MM. Ollivier and Barruel were appointed to analyse the remains of the meat which produced the cases first mentioned, as well as the alvine discharges of the child. The alvine discharges had a leek-green colour, and were not fetid, but of a sour smell. Sulphuretted hydrogen did not induce any change in colour, neither was any change of colour produced by the same reagent after the fluid was filtered. The remains of the pie had become mouldy. The meat and paste were separately examined. The contact of sulphuretted hydrogen did not produce any change of colour in either. When they were incinerated in a crucible and the residue treated with diluted nitric acid, the filtered liquid on being neutralised with ammonia did not give any precipitate with ferrocyanate of potass, or with sulphuretted hydrogen, and did not become blue with ammonia. Another portion of the remains of the pie was treated with alcohol and a few drops of acetic acid, and the alcoholic solutions were evaporated to the volume of half a drachm. The residue was agitated with four times its volume of distilled water, filtered and evaporated, and dissolved again in water. This solution was not affected by sulphuretted hydrogen or by nitric acid. These experiments furnish ample proof that the pie did not contain a trace of arsenic, copper, antimony, or lead. The only conclusion, therefore, which M. Ollivier conceived it possible to draw was, that the ham had, in some way or another, acquired the poisonous properties sometimes remarked in German sausages, cheese, and ham.—*Archives Générales de Médecine, Février*, 1830.

Public Health.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

City of Bristol.—Dr. D. S. Davies, in his current annual report, furnishes an instructive chart relative to the behaviour of infantile mortality in Bristol and Huddersfield respectively. There is, in a sense, a great similarity between the two curves, each having recently reached a lower level than ever before. Dr. Davies points out the fallacies which are liable to attend an inference that in Huddersfield the fall which has taken place is to be attributed to the special measures which have been taken against infantile mortality in Huddersfield. He does not think that the facts adduced support the view that the Huddersfield fall is due either entirely or in any large degree to the measures in question, an opinion which seems to be borne out by the fact that during the three years in which special measures have been taken in Huddersfield there has been a reduction of 18 per cent. in the infantile mortality, while in Bristol, where no such special measures have been taken, there has been a reduction of 15 per cent. Certainly, great caution should be exercised in drawing inferences from data which are not sufficiently numerous to afford a proper basis for inferences. But there can, we think, be no doubt that the methods adopted at Huddersfield are on right lines, and even if, as is not improbable, they as yet show no effect upon the death-rate curves, they might show some result were it possible to construct a curve as to physical conditions. Dr. Davies, who, as is well known, has devoted special attention to the subject of chronic carriers in enteric fever, gives a brief but interesting account of current knowledge as regards carrier cases as well as a synopsis of the outbreak of enteric fever at the Brentry Reformatory, Bristol, which was attributed by him to the specific contamination by a carrier case of milk which had been already sterilised. An account of this outbreak was given in our columns at the time. It appears that possibly this same woman, who is held responsible for the Brentry outbreak, may have been also the cause of enteric fever at another establishment in 1904 and of a commencing outbreak in another in 1905. At any rate, the carrier-case theory was found to fit in with the facts as regards the Brentry outbreak in 1906–07. There is, however, need for great caution in working with this carrier-case theory, as it is a very tempting one to employ and one which may possibly result in shutting our eyes to other causes. A considerable number of people who have reached middle life have suffered from a definite or suspected attack of enteric fever, and having regard to the fact that in carrier cases there may be numerous and long intervals between the bacilli-bearing periods there is the danger of assuming that, even in the absence of demonstrated enteric fever bacilli, everyone who has had enteric fever is a carrier case. We shall doubtless hear much of carrier cases in the near future because in epidemiology

fashion is so strong. But we do trust that wherever the carrier case is called in the full circumstantial as well as bacteriological evidence will be furnished, because there is undoubtedly a great deal yet to be learnt both about the chronic carrier and the carrier whom the Germans term the "acute" carrier—i.e., a person who has been in contact with a case of enteric fever and who without manifesting any symptoms of the disease may carry and excrete enteric fever bacilli. Dr. Davies's account of the outbreaks referred to is accompanied by some useful diagrams.

Borough of Lewisham.—We have referred on several occasions recently to measures taken, notably in France, for diminishing the loss of child life through instruction and help to pregnant mothers, and we are interested to see that in Lewisham Miss Duncombe (one of the Grey Ladies) has established what is practically a school for mothers during the antenatal period. Not only are advice and instruction given but also in needy cases almost free meals. Dinners are also provided for nursing mothers, every inducement being made to the mothers to breast-feed their offspring. Where breast-feeding is not possible and poverty prevents the purchase of milk orders for a free supply are given. Mr. A. Wellesley Harris speaks highly of the value of this movement, which is, we are glad to see, likely to be copied in other places. There are also in Lewisham three crèches which are performing admirable work in connexion with this question of infantile mortality. Mr. Harris reports that he has encountered considerable difficulty in obtaining the disinfection of schools after cases of infectious disease had occurred amongst the scholars attending such schools. The attitude of the education committee of the London County Council would seem to be, if not actually obstructive, at least lacking in that spirit of coöperation and assistance which should characterise its dealings with the London sanitary authorities if the ratepayers are to be properly protected and to obtain some return for the enormous expenditure to which they are put in supporting the numerous authorities concerned in the government of London. Apparently the education committee of the London County Council had, without informing the borough medical officers of health, instructed schoolkeepers not to allow any disinfection of the school premises without sanction from the education office, a procedure which is certainly not in the interests of the public health. Even after the difficulties of the position had been pointed out by Mr. Harris consent seems to have been very grudgingly given to the effect that "those medical officers who use formalin spray may be allowed to disinfect before or after school hours without sanction from the office." This attempt to place the borough medical officers of health in an altogether subordinate position by practically dictating to them how they shall do their work seems to us an undesirable procedure and not one which is calculated to promote good relations between the London County Council as a whole and the local authorities.

County Borough of Oldham.—Dr. J. B. Wilkinson, the medical officer of health, is, we are glad to see, taking steps to deal vigorously with the smoke nuisance not only of Oldham itself but also of the surrounding towns, and there is a prospect of the formation of a smoke board comprised of representatives for Oldham and other places near. Dr. Wilkinson supplies data which show, as he says, that there are appliances on the market which can do away with black smoke almost entirely, one of such appliances being cheap, trustworthy, and inexpensive to work. So much so is this the case that he regards it as "the duty of every mill owner who considers in any way the welfare of the town and its inhabitants to take steps to prevent the emission of black smoke from his mill in the future." We cordially endorse this sentiment and we have hopes of the smoke board. The fact that so many of the members of local authorities in manufacturing districts are themselves smoke producers renders it very difficult to get much done through local influence, but if for smoke administrative purposes a non-smoke producing area could be combined with a smoke area useful work might, we think, be carried out.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8895 births and 4682 deaths were registered during the week ending August 15th. The annual rate of mortality in these towns, which had increased during the four preceding weeks from 11·1 to 13·2 per 1000, further rose to 15·0 in the week under notice. During the first seven weeks of the current quarter the death-rate in these towns, notwithstanding this recent increase, averaged only 12·4 per 1000, and in London the rate during the same period did not exceed 11·5. The lowest annual death-rates in these 76 towns during the week under notice were 4·7 in West Hartlepool, 6·0 in King's Norton, 6·6 in Leyton, and 7·6 in Norwich; the rates in the other towns ranged upwards, however, to 26·3 in Merthyr Tydfil, 26·5 in Stockport, 27·2 in Middlesbrough, and 32·9 in Rhondda. In London the death-rate during the week did not exceed 13·2. The 4682 deaths from all causes in the 76 towns showed a further increase of 577 upon the low numbers returned in recent weeks, and included 1132 which were referred to the principal epidemic diseases, against numbers steadily increasing from 299 to 726 in the six preceding weeks; of these 1132 deaths, 927 resulted from diarrhœa, 62 from measles, 61 from whooping-cough, 34 from scarlet fever, 32 from diphtheria, and 16 from "fever" (principally enteric), but not one from small-pox. The deaths from these epidemic diseases last week were equal to an annual rate of 3·6 per 1000, against rates increasing from 1·1 to 2·3 in the four preceding weeks; in London the death-rate from these epidemic diseases did not exceed 2·7 per 1000. No death from any of these epidemic diseases was registered last week in Hastings, Brighton, Bournemouth, or in four other smaller towns; the annual death-rate from these diseases ranged upwards, however, to 8·4 in Bootle, 10·6 in Middlesbrough, 11·8 in Aston Manor, and 18·0 in Rhondda. The deaths attributed to diarrhœa in the 76 towns, which had steadily increased during the nine preceding weeks from 63 to 506, further rose to 927 in the week under notice, and caused in these towns annual death-rates ranging upwards to 6·9 in Burnley, 7·6 in Bootle, 10·1 in Middlesbrough, 11·8 in Aston Manor, and 15·7 in Rhondda. It is noticeable that the marked increase in the death-rate during recent weeks has been almost entirely due to diarrhœa, mainly infantile. The 62 fatal cases of measles showed a decline, while those of whooping-cough were somewhat more numerous; measles was proportionally most fatal in West Ham, Stockport, and Rochdale, and whooping-cough in Wolverhampton, Walsall, Southampton, and Stockton-on-Tees. The 34 deaths from scarlet fever corresponded with the number in the previous week, and showed the largest proportional excess in Swansea and West Bromwich. Of the 32 deaths from diphtheria, 10 occurred in London and its suburban districts, three in Liverpool, three in Manchester, and two in Great Yarmouth, which were equal to an annual rate of 2 per 1000. The 16 deaths referred to "fever" showed a decline of seven from the number in the previous week. The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had increased in the four preceding weeks from 2573 to 2761, had further risen to 2808 on August 15th; the number of new cases of this disease admitted to these hospitals during the week under notice further declined, however, to 343, from 423, 363, and 358 in the three preceding weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had steadily increased from 104 to 132 in the four preceding weeks, declined to 128 in the week under notice, but exceeded the corrected average number in the corresponding week of the five years 1903-07 by seven. The causes of 37, or 0·8 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were again last week duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, and in 63 other smaller towns; six uncertified causes of death were, however, registered during the week in Liverpool, five in Sheffield, four in Sunderland, and three in Birmingham.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 14·3, 13·5, and 12·8 per 1000 in the three preceding weeks, rose again to 13·4 in the week ending August 15th. During the first seven weeks of the current quarter the annual death-rate in these eight towns averaged 13·2 per 1000, and exceeded by 0·8 the mean rate during the same period in the 76

English towns. Among the eight Scotch towns the death-rates during the week under notice ranged from 5·2 in Paisley and 10·0 in Aberdeen to 15·2 in Glasgow and 19·3 in Perth. The 471 deaths in the eight towns showed an increase of 21 upon the low number in the previous week, and included 79 which were referred to the principal epidemic diseases, against 61 and 73 in the two preceding weeks; of these 79 deaths, 48 resulted from diarrhœa, 18 from whooping-cough, five from "fever," three from measles, three from diphtheria, and two from scarlet fever, but not one from small-pox. These 79 deaths were equal to an annual rate of 2·2 per 1000, which was 1·4 below the mean rate from the same diseases during the same week in the 76 English towns. The deaths attributed to diarrhœa in the eight towns, which had been 30 and 47 in the two preceding weeks, were 48 in the week under notice, and included 36 in Glasgow, six in Dundee, three in Edinburgh, and two in Leith. The fatal cases of whooping-cough increased again to 18 from 18 and 15 in the two previous weeks. The five deaths referred to "fever" included two certified as enteric and three as cerebro-spinal meningitis; two were returned in Glasgow, two in Edinburgh, and one in Paisley. All the three fatal cases of measles were returned in Glasgow; and of the three deaths from diphtheria, one each occurred in Glasgow, Aberdeen, and Greenock. The deaths referred to diseases of the respiratory organs in the eight towns, which had been 41 and 54 in the two preceding weeks, declined again to 45 in the week under notice, and were three below the number returned in these towns in the corresponding week of last year. The causes of nine, or 1·9 per cent., of the deaths registered in the eight towns during the week were not stated or not certified; in the 76 English towns during the same week the proportion of uncertified causes of death did not exceed 0·8 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 16·8 to 18·5 per 1000 in the two preceding weeks, further rose to 20·9 in the week ending August 15th. During the first seven weeks of the current quarter the death-rate in Dublin averaged 18·5 per 1000; the mean rate during the same period did not exceed 11·5 in London and 12·3 in Edinburgh. The 158 deaths of Dublin residents during the week under notice showed a further increase of 18 upon the numbers returned in the two preceding weeks, and included 43 which were referred to the principal epidemic diseases, against numbers increasing steadily from 11 to 23 in the six preceding weeks. These 43 deaths were equal to an annual rate of 5·7 per 1000; the rate during the week from the same diseases did not exceed 2·7 in London and 1·0 in Edinburgh. Of the 43 deaths from these epidemic diseases in Dublin last week, 37 resulted from diarrhœa, three from measles, and one each from diphtheria, whooping-cough, and "fever," but not one from scarlet fever or from small-pox. The deaths attributed to diarrhœa, which had been 12 and 18 in the two preceding weeks, further rose to 37 in the week under notice; and the fatal cases of measles also showed an increase upon the numbers in the two previous weeks. The 158 deaths from all causes during the week included 57 of infants under one year of age, and 30 of persons aged upwards of 60 years; the deaths of infants showed a further marked increase, and considerably exceeded the number returned in any previous week of this year. Nine inquest cases and eight deaths from violence were registered, and 46, or 29·1 per cent., of the deaths recorded during the week occurred in public institutions. The causes of seven or 4·4 per cent., of the deaths registered were uncertified; the causes of all but one of the 1126 deaths in London last week were duly certified, as were the causes of all the 90 deaths in Edinburgh.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff Surgeons: E S. Reid, lent for duty at Landguard range, temporary; L. Kilroy, to the *President*, additional, for Yarmouth Hospital, temporary; R. M. Richards, to the *Bulwark*, on recommissioning; and S. H. Woods, to the *Skipjack*. Surgeons: W. C. Carson, to the *Duncan*, on recommissioning; H. G. T. Major, to the *Spanker*; W. Bastian to the *Bulwark*, on recommissioning; J. D. Keir, to the *Sapphire*, additional, for *Sapphire II.*; C. Ross, to the *Vivid*, additional, for disposal; D. H. Vickery, to the *Albemarle*, on recommissioning; and J. R. A. Clarke-Hall, to the *Illustrious* (appointment to the *Albemarle* cancelled).

ROYAL ARMY MEDICAL CORPS.

Captain William Byam is seconded for service with the Egyptian army (dated July 24th, 1908).

The undermentioned Lieutenants to be Captains (dated July 31st, 1908):—Charles P. Thomson, George W. Heron, Robert J. B. Buchanan, George S. Wallace, William S. Nealor, Richard G. Meredith, Frederick E. Roberts, Arthur A. McNeight, Thomas H. Gibbon, James E. Hoar, Ernest B. Booth, Richard J. C. Thompson, Cecil D. M. Holbrooke, Ernest G. R. Lithgow, Pierce Power, James S. Pascoe, Charles W. O'Brien, George G. Tabuteau, John M. B. Rahilly, Richard E. Humfrey, William G. Maydon, Garfield Ormrod.

The undermentioned Lieutenants are confirmed in that rank: Colin Cassidy, John James, Alfred C. H. Suhr, John E. Ellcombe, Gerald J. Keane, Harold H. Blake, Robert M. Dickson, Frank Worthington, Frederick H. Bradley, Alexander L. Stevenson, Bernard Varvill, Joseph W. Houston, Arthur Shepherd, Wilfred J. Dunn, Frank B. Dalgliesh, Malcolm Leckie, Charles E. L. Harding, Falkiner M. Hewson, Arthur L. Foster, Claude M. Rigby, Alan G. Wells, Alexander E. G. Fraser, Walter H. S. Burney, Thomas S. Eves, Leo Murphy, Arthur H. T. Davis, John S. McCombe, William J. Tobin, and Campbell McQueen.

THE TERRITORIAL FORCE.

Royal Army Medical Corps.

Eastern Mounted Brigade Field Ambulance: Major Edmund Frederick Bindloss (Brigade Surgeon-Lieutenant-Colonel, Senior Medical Officer, Bedford Volunteer Infantry Brigade), from the Bedford Bearer Company, Royal Army Medical Corps (Volunteers), to be Lieutenant-Colonel (dated, April 1st, 1908). Surgeon-Captain Edward John Cross, from the 4th (Hunts) Volunteer Battalion, the Befordshire Regiment, to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Oliver Smithson to be Lieutenant (dated May 6th, 1908).

South-Eastern Mounted Brigade Field Ambulance: Lieutenant Percy Charles Burgess, from the Eastern Command, Maidstone Companies, Royal Army Medical Corps (Volunteers), to be Major (dated April 1st, 1908). Frederick Boileau Treves to be Lieutenant (dated April 1st, 1908).

1st South Midland Mounted Brigade Field Ambulance: Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel William Henry Bull (Brigade Surgeon-Lieutenant-Colonel, Senior Medical Officer, South Midland Volunteer Infantry Brigade), from the 1st Bucks Volunteer Rifle Corps, to be Lieutenant-Colonel with the honorary rank of Colonel, with precedence as in the Volunteer Force (dated April 1st, 1908). Captain Charles John Deyns, from the Home Counties Bearer Company, Royal Army Medical Corps (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Douglas William Anderson Bull to be Lieutenant (dated May 13th, 1908). Alfred William Moore to be Lieutenant (dated May 13th, 1908). Gurney White Buxton to be Lieutenant (dated May 13th, 1908).

South Wales Mounted Brigade Field Ambulance: Captain and Honorary Major Francis Henry Thompson, from the Welsh Border Bearer Company, Royal Army Medical Corps (Volunteers), to be Lieutenant-Colonel (dated April 1st, 1908). Captain James McKean Harrison, from the Welsh Border Bearer Company, Royal Army Medical Corps (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). John Robert Isaac Raywood (late Surgeon-Captain, 5th Volunteer Battalion, the South Wales Borderers) to be Captain (dated May 27th, 1908). Albert Willis Warren Swettenham to be Lieutenant (dated May 27th, 1908).

1st South Western Mounted Brigade Field Ambulance: Major Henry John Mackay, from the Wilts and Dorset Bearer Company, Royal Army Medical Corps (Volunteers), to be Lieutenant-Colonel (dated April 1st, 1908). Surgeon-Major George Rodway Swinhoe, from the 2nd Volunteer

Battalion, the Duke of Edinburgh's (Wiltshire Regiment), to be Major (dated April 1st, 1908). Thomas Horatio Haydon, to be Lieutenant (dated May 16th, 1908). Arthur Sydney Gedge to be Lieutenant (dated May 16th, 1908). James Cecil Burton to be Lieutenant (dated May 16th, 1908).

2nd South Western Mounted Brigade Field Ambulance: Captain Richard George Worger, from the Wilts and Dorset Bearer Company, Royal Army Medical Corps (Volunteers), to be Captain (dated April 1st, 1908).

Welsh Border Mounted Brigade Field Ambulance: Lieutenant-Colonel George William Sidebotham, from the Cheshire Bearer Company, Royal Army Medical Corps (Volunteers), to be Lieutenant-Colonel, with precedence as in the Volunteer Force (dated April 1st, 1908).

1st East Anglian Field Ambulance: Major and Honorary Lieutenant-Colonel Stanley Stanton Hoyland from the Harwich Bearer Company, Royal Army Medical Corps (Volunteers), to be Lieutenant-Colonel (dated April 1st, 1908). Surgeon-Captain Francis Augustus Brooks, from the 1st Suffolk and Harwich Royal Garrison Artillery (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Captain William Alexander Gibb, from the Harwich Bearer Company, Royal Army Medical Corps (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Ernest Victor Gostling to be Lieutenant (dated May 6th, 1908).

1st Highland Field Ambulance: Captain Ashley Watson Mackintosh, from the Scottish Command, Aberdeen Companies, Royal Army Medical Corps (Volunteers), to be Major (dated April 1st, 1908). The under-mentioned officers, from the Scottish Command, Aberdeen Companies, Royal Army Medical Corps (Volunteers), are appointed to the Field Ambulance, with rank and precedence as in the Volunteer Force (dated April 1st, 1908): Captain Alexander Ogston, Captain Thomas Fraser, Captain Peter Mitchell, Captain John Wallace Milne, Captain David Rorie, and Lieutenant Peter Howie.

2nd Highland Field Ambulance: Captain Arthur Hugh Lister, from the Scottish Command, Aberdeen Companies, Royal Army Medical Corps (Volunteers), to be Major (dated April 1st, 1908). The undermentioned officers from the Scottish Command, Aberdeen Companies, Royal Army Medical Corps (Volunteers), are appointed to the Field Ambulance, with rank and precedence as in the Volunteer Force (dated April 1st, 1908): Captain Francis Kelly, Captain James Smart, Captain James Dickson Noble, Lieutenant John Innes, and Lieutenant Lewis Davie Cruickshank.

3rd Highland Field Ambulance: Surgeon-Major William Kinnear from the 3rd (Dundee Highland) Volunteer Battalion, The Black Watch (Royal Highlanders), to be Lieutenant-Colonel (dated April 1st, 1908). Surgeon-Major George Halley (since deceased), from the 1st Forfarshire Royal Garrison Artillery (Volunteers), to be Major, with precedence as in the Volunteer Force (dated April 1st, 1908). Captain Alexander Edward Kidd, from the Black Watch Bearer Company, Royal Army Medical Corps (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Lieutenant George Waterston Miller, from the 1st (City of Dundee) Volunteer Battalion, The Black Watch (Royal Highlanders), to be Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908). Sidney Watson Smith (late Captain, 3rd (Dundee Highland) Volunteer Battalion, The Black Watch (Royal Highlanders)), to be Lieutenant (dated April 1st, 1908). James Martin Smith to be Lieutenant (dated April 1st, 1908). John Henderson Hunter to be Lieutenant (dated April 1st, 1908).

1st London Field Ambulance: Surgeon-Major and Honorary Surgeon-Lieutenant-Colonel (Honorary Captain in the Army) Richard Reginald Sleman, from the 20th Middlesex (Artists) Volunteer Rifle Corps, to be Lieutenant-Colonel (dated April 1st, 1908). Surgeon-Major Eustace Maude Callender, from The Prince of Wales's Own, 12th Middlesex (Civil Service) Volunteer Rifle Corps, to be Major, with precedence as in the Volunteer Force (dated April 1st, 1908). Major Alfred Croudson Tunstall, from the 4th or City of London Bearer Company, Royal Army Medical Corps (Volunteers), to be Major, with precedence as in the Volunteer Force (dated April 1st, 1908). Honorary Captain in the Army Edmond William St. Vincent Ryan, late Captain, East Surrey Bearer Company, Royal Army Medical Corps (Volunteers), to be Captain (dated April 1st, 1908). Captain John Forbes, from the 4th or City of London Bearer Company, Royal Army Medical Corps (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Lieutenant Charles Archibald Lees, from the 4th (Hunts) Volunteer Battalion, The Bedfordshire Regiment, to be Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Lieutenant Percival George Albert Bott, from the 18th Middlesex Volunteer Rifle Corps, to be Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Lieutenant Robert Ollerenshaw, from the 4th Volunteer Battalion, The Cheshire Regiment, to be Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908). Edward Leopold Rowse to be Lieutenant (dated April 1st), 1908.

2nd London Field Ambulance: Captain Joseph Norwood Brown (Brigade Surgeon-Lieutenant-Colonel, Senior Medical Officer, 1st London Volunteer Infantry Brigade), from the 2nd London Bearer Company, Royal Army Medical Corps (Volunteers), to be Lieutenant-Colonel (dated April 1st, 1908). Surgeon-Captain John Alfred Masters from the London Division (Electrical Engineers) Royal Engineers (Volunteers), to be Major (dated April 1st, 1908). Captain Edwin Charles Montgomery-Smith, from the 2nd London Bearer Company, Royal Army Medical Corps (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Supernumerary Surgeon-Captain Henry Macnaughton Macnaughton-Jones, from the 4th Volunteer Battalion, Royal Fusiliers (City of London Regiment), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Captain William Peart Thomas, from the 1st Volunteer Battalion, The Northamptonshire Regiment, to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Lieutenant Andrew Elliot, from the 2nd Middlesex Royal Garrison Artillery (Volunteers), to be Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908). Frances Rowland Humphreys to be Lieutenant (dated April 1st, 1908).

3rd London Field Ambulance: The undermentioned officers, from the London District, London Companies, Royal Army Medical Corps (Volunteers), are appointed to the Field Ambulance, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Lieutenant-Colonel James Harper, Major John Robert Whait, Captain William Salisbury Sharpe, Captain (Honorary Lieutenant in the Army) Edmund William Herrington, Captain Ernest Alfred Snape, Lieutenant Hubert Charles Phillips, Lieutenant Harold Arthur Thomas Fairbank, Lieutenant George Langrigg Leathes Lawson. Captain William Ernest Miles, from the London District, London Companies, Royal Army Medical Corps (Volunteers), to be Major (dated April 1st, 1908).

4th London Field Ambulance: Major Alexander Stevenson Greenway, from the Eastern Command, Woolwich Companies, Royal Army Medical Corps (Volunteers), to be Lieutenant-Colonel (dated April 1st, 1908). The undermentioned officers are appointed to the Field Ambulance, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Captain John Hardie, from the Eastern Command, Woolwich Companies, Royal Army Medical Corps (Volunteers) and Captain Arthur Edward Jerman, from the Eastern Command, Woolwich Companies, Royal Army Medical Corps (Volunteers).

5th London Field Ambulance: The undermentioned officers, from the Eastern Command, Woolwich Companies, Royal Army Medical Corps (Volunteers), are appointed to the Field Ambulance, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Lieutenant-Colonel and Honorary Colonel Charles Henry Hartt, Captain Ernest Blair Dowsett, and Lieutenant Robert Corfe.

2nd North Midland Field Ambulance: Evan Llewellyn Jenkins to be Lieutenant (dated June 16th, 1908).

1st Northumbrian Field Ambulance: George Herbert Spencer to be Lieutenant (dated May 2nd, 1908).

1st Welsh Field Ambulance: Major John William Davies, from the South Wales Border Bearer Company, Royal Army Medical Corps (Volunteers), to be Lieutenant-Colonel (dated April 1st, 1908). The undermentioned officers, from the South Wales Border Bearer Company, Royal Army Medical Corps (Volunteers), are appointed to the Field Ambulance, with rank and precedence as in the Volunteer Force (dated April 1st, 1908: Lieutenant Thomas Donovan and Lieutenant

John O'Sullivan. John Francis Dwyer (late Lieutenant, South Wales Border Volunteer Infantry Brigade Bearer Company) to be Lieutenant (dated April 1st, 1908).

1st Wessex Field Ambulance: Captain Ransom Pickard, from the Devon Bearer Company, Royal Army Medical Corps (Volunteers), to be Major (dated April 1st, 1908). Lieutenant Alexander Ward Fortescue Sayres, from the Devon Bearer Company, Royal Army Medical Corps (Volunteers), to be Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Lieutenant Leonard Robert Tosswill, from the 1st Devonshire and Somersetshire Royal Engineers (Volunteers), to be Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908) Thomas Duncan to be Lieutenant (dated May 5th, 1908). George Poole David Hawker to be Lieutenant (dated May 5th, 1908). John Miller to be Lieutenant (dated May 5th, 1908). Richard Eager to be Lieutenant (dated May 5th, 1908).

3rd Wessex Field Ambulance: Supernumerary Surgeon-Captain and Honorary Surgeon-Major Harry Munyard Brownfield, from the 1st Volunteer Battalion, The Hampshire Regiment, to be Lieutenant-Colonel (dated April 1st, 1908). Supernumerary Surgeon-Captain Herbert James Godwin, from the 1st Volunteer Battalion, The Hampshire Regiment, to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Supernumerary Surgeon-Lieutenant John Aston Swindale, from the 1st Volunteer Battalion, The Hampshire Regiment, to be Lieutenant, with precedence as in the Volunteer Force (dated April 1st, 1908).

1st Scottish General Hospital: George Maitland Edmond (late Surgeon-Major, 1st Volunteer Battalion, The Gordon Highlanders), to be Lieutenant-Colonel (dated April 1st, 1900). Captain William Archer Irvine Fortescue, from the Scottish Command, Aberdeen Companies, Royal Army Medical Corps (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). James Callan (formerly Captain, 4th (Donside Highland) Volunteer Battalion, The Gordon Highlanders), is appointed Quartermaster, with the honorary rank of Lieutenant (dated April 1st, 1908).

3rd Scottish General Hospital: Lieutenant Donald James MacKintosh, M.V.O., from Transport Officer, Scottish Command, Glasgow Companies, Royal Army Medical Corps (Volunteers), to be Lieutenant-Colonel (dated April 1st, 1908). Surgeon-Captain Archibald Gilchrist Hay, from the 1st Dumbartonshire Volunteer Rifle Corps, to be Major (dated April 1st, 1908).

4th Scottish General Hospital: Supernumerary Surgeon-Major (Honorary Captain in the Army) Robert Pollok (Brigade Surgeon Lieutenant-Colonel, Senior Medical Officer, Highland Light Infantry, Volunteer Infantry Brigade), from the 3rd (The Blythswood) Volunteer Battalion, The Highland Light Infantry), to be Lieutenant-Colonel (dated April 1st, 1908). Duncan Otto MacGregor to be Major (dated June 24th, 1908).

2nd London Sanitary Company: Frederick Nutcombe Hume to be Major (dated June 20th, 1908). Walter Francis Corfield to be Lieutenant (dated July 14th, 1908).

Sanitary Service: Thomas Eustace Hill to be Major (dated June 24th, 1908).

Correspondence.

"Audi alteram partem."

AUDACIOUS ADVERTISEMENTS.

To the Editor of THE LANCET.

SIR,—During the last month my name and portrait and a quotation from an address of mine have appeared in several newspapers in an advertisement on the large scale of a certain patent remedy of which I had never previously heard. Immediately on the matter being brought to my notice I put it in the hands of my solicitors and they have called on the vendors of the patent remedy to withdraw the advertisement at once and on the newspapers in which it has appeared to undertake not to re-insert it.

The quotation from my address had not the remotest relevancy to this or any other patent remedy and the portrait, it appears, was obtained from Messrs. Elliot and Fry without the purpose for which it was to be used being disclosed. They apologise and express their regret for the annoyance to which I have been put through their inadvertence. I regard the whole proceeding on the part of the vendors of this patent remedy—well calculated to mislead the unwary—as a piece of gross and unpardonable impertinence.

I am, Sir, yours faithfully,

London, August 15th, 1908. JAMES CRICHTON-BROWNE.

THE MEETING-POINT OF ANATOMY AND PHYSIOLOGY.

To the Editor of THE LANCET.

SIR,—In the report of the discussion on the teaching of anatomy at the British Medical Association's meeting,[1] your reporter credits me with the suggestion that pathology and anatomy should be taught under the supervision of one professor. What I did urge was that microscopical anatomy should be taught in the department of anatomy rather than under the supervision of the professor of physiology, as is the present custom in British schools. In support of this suggestion I pointed out that the re-annexation to histology by the anatomist would be a great gain both to him and the physiologist, relieving the latter of a subject which he does not want and broadening the outlook of the former by bringing him into closer contact with physiology and pathology. Moreover, it would tend to obviate the neglect of the borderland between microscopical and gross anatomy—i.e., the finer structure visible to the naked eye—which is of such great importance to the student of pathology in the post-mortem room.

I am, Sir, yours faithfully,

G. ELLIOT SMITH.

St. John's College, Cambridge, August 14th, 1908.

AMYL NITRITE IN UTERINE HÆMORRHAGE.

To the Editor of THE LANCET.

SIR,—The letter of Dr. F. Hare in THE LANCET of August 8th on the use of amyl nitrite in uterine hæmorrhage prompts me to record some details of a case which occurred when I was house physician to the General Lying-in Hospital, London. I had heard that amyl nitrite had been known to cause relaxation in a tonically contracted uterus. In a difficult version case Mr. A. Lionel H. Smith, who was administering the anæsthetic, at my request gave the patient the contents of a capsule of amyl nitrite. I had hoped that the uterus, which was becoming irritable and contracted down upon the fœtus, would relax. No relaxation whatsoever could be appreciated, but within half a minute a flow of blood from the vagina appeared and continued steadily until the delivery about five minutes later of the fœtus and the placenta together. In all about 20 to 30 ounces of blood were lost before the delivery of the dead fœtus which was alive at the commencement of the version. Although early separation of the placenta is by no means uncommon, and may in some cases be due to intra-uterine manipulation, I cannot help feeling that in the above case it was caused by the amyl nitrite, but in what way it acted I am not prepared to offer a definite opinion.

Between the bleeding of menstruation, of that caused by fibroids, of malignant disease, of endometritis, and that caused by post-partum hæmorrhage there is considerable difference; in the former it is a capillary oozing, in the latter it comes from larger vessels, arteries, and possibly veins. It is conceivable that the explanation Dr. Hare offers for the arrest of capillary oozing may be correct, but the same cannot apply in post-partum hæmorrhage, in which condition I venture to think the drug might be distinctly harmful. Most authorities are agreed that bleeding after labour is due to want of contraction of the uterine muscle whereby the blood-vessels which pass serpiginously through the uterine wall fail to be compressed. It is possible to imagine that amyl nitrite might indirectly aid coagulation of the blood at the placental site, but it is far more reasonable to suppose that it might cause relaxation of the uterine muscular tissue and thus increase the hæmorrhage and the danger of the mother.

It would appear, therefore, that in cases of uterine

[1] THE LANCET, August 15th, p. 468.

hæmorrhage due to capillary oozing the very excellent results obtained by Dr. Hare warrant us in giving amyl nitrite a trial, but that in cases of post-partum hæmorrhage upon theoretical grounds its use is distinctly contra-indicated, whilst given before delivery it may be not without danger both to the mother and to the fœtus.

I am, Sir, yours faithfully,

STANLEY COLYER, M.D., M.R.C.P. Lond.

Halifax, August 10th, 1908.

THE ALLEGED PRESENCE OF MALTA FEVER IN HONG-KONG.

To the Editor of THE LANCET.

SIR,—In the Milroy lectures recently published in THE LANCET[1] Dr. J. W. H. Eyre states, "Bishop, who himself suffered from the disease, states that it is endemic in Hong-Kong and Shanghai." May I say that there is some error here? The statement has not the slightest foundation in fact. I have been in practice here for over 21 years, and for 12 years have been connected with this hospital—the largest in the colony—which admits patients of all classes and all nationalities. I have never seen a case myself or ever heard of one arising in the colony. No medical man of the name of Bishop has been in practice in this colony for the last 25 years. The same remark applies to kala-azar, which I believe is also put down as a Hong-Kong disease.

I am, Sir, yours faithfully,

J. BELL,

Civil Hospital, Hong-Kong, July 14th, 1908. Superintendent.

SCIENTIFIC MARCHING.

To the Editor of THE LANCET.

SIR,—The physique of our recruits and their proper training are occupying the minds of many of us while we are watching the development of our new army. It seems to me, speaking out of considerable experience, that our style of marching requires constant care and observation. In walking the heel touches the ground first and then rapidly the rest of the foot, and the great toe leaves the ground last. The soldier in some countries is taught to place the foot almost flat on the ground, but this is a mistake as the body loses in part the advantage of the buffer-like mechanism of the heel. The toes are turned out at an angle of about 30° to 45° and at each step the leg advances forward and a little outward; the centre of gravity, which is between the navel and the pubes, about in a line with the promontory of the sacrum, is constantly shifting.

It has been supposed that it would be of advantage to keep the foot quite straight or to turn the toes a little in and to let the feet advance almost in a line with each other. But the advantage of keeping the feet apart and the toes turned out is that, first, the feet can advance in a straight line, which is obviously the action of the great vasti muscles in front of the thigh, and second, when the body is brought over the foot, the turned-out toes give a much broader base of support than when the foot is straight. The spring from the great toe may perhaps be a little greater when the foot is straight (although this is doubtful, and there seems no reason why the gastrocnemei and solei should contract better in this position), but there is a loss of spring from the other toes. Besides this it has been shown by Weber that when the leg is at its greatest length—i.e., when it has just urged the body forwards and is lifted from the ground—it falls forward like a pendulum from its own weight, not from muscular action, and this advance is from within and behind to without and before, so that this action alone carried the leg outwards. The foot should be raised from the ground only so far as is necessary to clear obstacles. "Formerly the Russian Guard were taught to march with a peculiarly high step, the knee being lifted almost to a level with the acetabulum. The effect was striking, but the waste of power was so great that long marches were impossible and this kind of marching is now given up. The foot should never be advanced beyond the place where it is to be put down: to do so is a waste of labour." I emphasise the importance of this, as in modern campaigns rapidity of movement combined with endurance have been all-powerful factors in determining the issue.

In the Franco-German war, for example, McMahon, advancing to the east to relieve Bazain, his troops consisting largely of raw and imperfectly trained levies, accomplished only an average of about 10 or 11 miles daily, while the Crown Princes of Prussia and Saxony, suddenly changing front, seized both sides of the Meuse and advancing through Champagne and the Ardennes, marching 20 to 25 miles a day, encircled the French forces and hemmed them up in the basin of Sedan against the Belgian frontier. In his skilful retreat on Orleans Van der Tann with his Bavarian army marched 42 miles in 26 hours. In advancing to join Wellington at Talavera Mackenzie marched 62 miles in 26 hours. In the Indian Mutiny several regiments marched 30 miles a day for several days. The longest march of the Russians in the Khiva expedition in 1873 was 26½ miles in 24 hours. The Russian Footguards advancing to Paris in 1814 after the combat at Fère-Champenoise, marched 48 miles in 26 hours. After Sedan the Germans marching on Paris averaged about 21 to 22 miles daily, on some days accomplishing 26 to 28 miles daily; they started at 5 or 6 and were on their ground from 4 to 8 o'clock, the average pace being 3·1 miles per hour. Dr. E. Parkes remarks "that it is scarcely less interesting to the physiologist than important to the soldier to know what has been done and what can be done with a large body of infantry. Gradual increase of exercise is well known and attended to by trainers; gentle walking persevered in for a long time, then slow gallops; then, as the horse gains wind and strength, quicker gallops; but the horse is never distressed, and a boy would be dismissed from a stable if it were known that the horse he was riding showed, by sighing or in any other way, that the speed was too great for him." Before a Prussian recruit is entered in a foot regiment he is carefully examined in order to see whether his feet will bear the strain of long marches and the greatest attention is paid to the fit of the boots. In forced marches, whenever practicable, the knapsacks are conveyed in a cart attached to each company.

I am, Sir, yours faithfully,

August 18th, 1908. ALLEX.

[1] THE LANCET, June 13th (p. 1677), 20th (p. 1747), and 27th (p. 1825), 1908.

THE LIVERPOOL PUBLIC ABATTOIR.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

As an old historic port Liverpool suffers as well as it benefits from this ancient origin. The presence of much shipping has attracted an unstable and varying population of rough unskilled labourers. These are an uncouth class who never earn high wages, who are content to live in slums, and who do not attempt to create a comfortable and decent home life. Flocking to Liverpool before any sanitary legislation had been enacted to check such evils, they encouraged the creation of fearful slums and had to live in the most unwholesome surroundings. Typhus fever became endemic and when the cholera came it found ready victims. The death-rate at Liverpool was 41·7 in 1866, but that was the year of the cholera. The average death-rate for the ten years 1861 to 1870 was 32·5. For the ten years 1891 to 1900 it had fallen to 23·9 per 1000, and this, while showing that great improvements have been effected, also indicates that there still remains much to be done. When in 1842 the celebrated Commission was appointed to inquire into the health of towns this constituted an event from which may be dated the commencement of modern sanitation, and these commissioners, speaking of Liverpool, said that whilst in some particulars the condition "of a few other cities was almost the same as that of Liverpool, yet there were many in which it must be acknowledged that Liverpool was worse than any of them." Out of a population then amounting to 223,000 some 160,000 lived in narrow courts and in cellars. There was no adequate water-supply, no drainage, no control of the food-supply, of the schools, and of the dwellings. From the sanitary point of view chaos reigned supreme. The numerous official inquiries made in regard to the various epidemics that occurred showed the excessive drunkenness prevalent in these times, but it was regarded as the result of destitution rather than its cause. It was not till 1867 that the city's health committee took the scavenging in hand, and Mr. Reynolds,

the veterinary superintendent, reported that under the methods then prevailing there were 64,000 tons of filthy refuse in the huge ashbin or middens which formed channels extending the whole length of the streets and overflowing with fæcal matter and offensive refuse.

It was at the beginning of the nineteenth century and while Liverpool was still in the condition which the above words very inadequately describe that a few butchers agreed to unite their slaughter-pens and to form one establishment. For this purpose, and considering only their own convenience as tradesmen, they naturally selected a central position. Nobody in those days sought to classify the slaughtering of animals as an unwholesome industry that should only be allowed at a certain distance from dwelling houses. Therefore the butchers established themselves in the very heart of the city close to the Royal Infirmary and the University. They bought up surrounding houses and killed a large number of animals in the immediate neighbourhood of crowded dwellings. With the great reforms introduced in Liverpool during recent years the corporation bought out the private butchers and converted their premises into a public slaughter-house. The premises were quite unsuited for the purpose but are better managed now. First some clearances have been effected and a row of dwelling houses pulled down so that there are more space and air. But, above all, the situation is saved by the fact that there is comparatively little killing done there. What used to be a sort of slaughter-hall has now been converted into a wholesale meat market. Most of the killing is done on the other side of the Mersey where there are cold storage and many other facilities available. What meat is wanted for Liverpool is brought over from Birkenhead and exposed for sale in the meat market. Nevertheless some killing is done at the Liverpool abattoir, notably of sheep. Here there are no modern contrivances. It is but a small place at the end of the old meat market. The pavement is cemented so that the subsoil is no longer contaminated and there is a good light from a glass roof. As this roof faces the north the slaughtermen are not troubled by direct rays of sunlight. The whole place, however, is so small that the pens where the sheep are kept are in full view of the spot where the animals are killed. In view, however, of observing the rules as to humane slaughtering a sheet is hung up to prevent the living sheep from seeing what is going on. Also to efface all trace of blood and to keep the place clean the walls should be whitewashed once a month according to the by-law; in practice, however, they are whitewashed every week.

All the way from Bootle to Garston, a distance of seven miles, there are only 23 private slaughter-houses and the one small public abattoir. At the latter establishment anyone may kill by paying 1*s.* 6*d.* for cattle, 6*d.* for calves, and 1½*d.* for pigs. These charges are much too low. If proper accommodation is provided a higher charge can be made. When after being killed an animal is found to be diseased it is not necessary to obtain a magistrate's order for its destruction. As a measure of protection the medical officer of health calls for a jury of the trade. Three butchers are asked to examine the carcass and they sign a certificate that it is unsound. They receive each a fee of 6*d.* for thus testifying. Any attempt to conceal unwholesome meat would be very dangerous, as at Liverpool the magistrates readily inflict terms of imprisonment for such offences. The butchers are bound to notify at once. Any delay would be considered suspicious and might cause an interference on the part of the law that would not be pleasant. When any meat is condemned there is a small dark room where it is kept till it can be taken to the destructor. This is an unsuitable and small place and ought not to exist so near to fresh wholesome meat and inhabited houses. Care also should be taken at once to surround diseased meat with wire gauze or some other contrivance that will prevent flies walking over it and carrying away some of the disease germs. Modern research has fully demonstrated the danger of flies.

In consequence of the great trade done at Birkenhead with the importation of live cattle from America there is comparatively little slaughtering of cattle at Liverpool. Perhaps if there had been a large and model modern abattoir at Liverpool matters would have been different. For many years various schemes have been suggested and the town council has been urged to build a proper and large abattoir and cattle-market in the outskirts. But the large number of cattle that are brought over from Ireland disembark on the Princes Landing Stage and it would be a difficult matter to drive them to a distant suburb. Moreover there is the large and well-established business at Birkenhead. Nevertheless the reform indicated is much needed. Liverpool needs something better than what the butchers have left and had commenced to construct in the old days when Liverpool was celebrated as the most unhealthy town in England.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Precept and Example at Oldham.

OLDHAM is a town of mills and works, but in spite of that laudable efforts are being made to make it more beautiful, or at least less ugly, by planting open spaces and encouraging the cultivation of flowers. Black smoke renders success difficult, and the hope has long been held out that electricity for heating, lighting, and power would get rid of this monstrous and injurious nuisance. At all events, it was not anticipated that the production of electricity would bring about the worst forms of smoke nuisance. But as to this matter corporations have much to answer for, and the Oldham town council, it would seem, stands out as one of the chief among the sinners. At a recent meeting of the council one of the members attacked the corporation for prosecuting mill companies for sending out black smoke from factory chimneys, "while the electricity station belched forth black smoke almost continually and was allowed to continue without a prosecution." He said that "this chimney was a bigger nuisance than any other in the town." The chairman of the electricity committee said: "The inspector has taken numerous observations of the chimney and finds no fault with it." This remark was received with "loud laughter." Another of the council said that it was a perfect nuisance night and day. There is a great deal of slackness in many places about putting the powers for controlling the smoke nuisance into action, and inspectors soon begin to distinguish between a nuisance caused by the "authority" and one having no such protection. Things would be better if the prosecution were for the offence irrespectively of the person of the offender.

Cats and Diphtheria.

There has been an outbreak of diphtheria in the Mottram-in-Longdendale urban district attributed by Dr. G. J. Awburn in one case to infection from a pet cat which had been ill and was found to be suffering from diphtheria. The cat was destroyed. The liability of cats to contract diphtheria has long been known but is often forgotten till mischief has been done. Dr. Awburn gave some good advice, recommending people who had cats suffering from coughs, particularly if they were in an emaciated condition, to have them destroyed at once. Unfortunately this is the time when pets are, as a rule, petted and nursed all the more. The danger, however, should be widely proclaimed.

Health and the Ship Canal.

At the last meeting of the port sanitary authority Mr. W. F. Dearden reported that in the month of July last 197 vessels were inspected, 86 of which were found to be insanitary. Of these, 39 were at the Manchester end of the canal, 14 at Runcorn, and 17 at Weston Point. The attention of the skippers was directed to the defects found and a notice was left on the vessels ordering measures for abatement. In one case where the notice had been disregarded the authority gave the medical officer power to serve a public health notice. During the month ten vessels arrived from ports known to be infected with plague or small-pox. It is necessary, therefore, to keep up incessant watch against sickness introduced by the canal. There is another danger to be guarded against. During the month over 118 tons of foodstuffs were condemned and destroyed. In addition to this 88 tins of beef, 99 of mutton, and 17 of tongue were voluntarily given up. The canal has been of great benefit to Manchester as regards commerce but has made it more vulnerable to disease.

Houses without Windows.

It seems almost unthinkable that in these days houses without windows should be in existence. It appears that there are, however, such places in the district represented by the

Brampton (Cumberland) rural council, for it is reported in the papers that the Countess of Carlisle, speaking at one of the meetings, referred to a house without windows where a case of scarlet fever had occurred. The council, which possibly is not adventurous, "decided to *consider* the question of dealing with houses without windows." The houses are not likely to be models of good sanitation and very probably require more ventilation as well as more light.

August 18th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Lord Mayor and the Sanitary Inspectors' Association.

THE Sanitary Inspectors' Association will hold its annual conference in Liverpool in September, when a long and interesting programme of work and pleasure will be provided for the numerous delegates. The Lord Mayor (Dr. Richard Caton) is taking a great interest in the conference, and in addition to reading a paper will entertain as many as possible of the delegates at luncheon at the town-hall.

Vaccination Statistics for Toxteth Union.

The number of births in the township of Toxteth during 1907 was 1956; the number of children successfully vaccinated was 1367; conscientious objectors, 30; dead, 226; vaccinations postponed by medical certificates, 81; removals, 224; insusceptible, 6.

The Birkenhead Fever Hospital.

Dr. E. P. Manby, medical inspector of the Local Government Board, held an inquiry on August 11th, at the Birkenhead town-hall, into the application of the town council to borrow £7679 for alterations and additions to the infectious diseases hospital at Flaybrick. The deputy chairman and other members of the health committee said that it was within their knowledge that the administrative block was not sufficient to carry out the necessary work at the hospital without some enlargements. Dr. R. S. Marsden, the medical officer of health, also gave evidence to the effect that the present accommodation was totally inadequate for the reception of cases of infectious disease.

Aguust 18th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Post-graduate Medical Classes at the Glasgow Royal Infirmary.

THE Glasgow Royal Infirmary is the oldest and certainly one of the best known institutions of the kind in the West of Scotland. It has exceptional facilities for clinical teaching. The indoor daily residence averages 600 patients and during the year 1907 over 9000 indoor cases were treated, while more than 50,000 were dealt with in the outdoor and special departments. Including all the attendances, the enormous number of 187,000 came in view during the year. With this large amount of clinical material the staff have exceptional facilities for demonstrating disease in all its aspects, and when the new hospital buildings are completed the facilities for practical teaching will be unsurpassed by any institution in the United Kingdom. During the last four years carefully arranged post-graduate classes have been conducted and that they have been fully appreciated and taken advantage of by the profession is shown by the very satisfactory attendances. The classes have been made up not only of practitioners in the city and neighbourhood of Glasgow but many have travelled long distances in order to benefit by the teaching. On Sept. 1st the autumn course will commence and will include 20 separate classes, viz.:—Clinical Medicine, (*a*) Dr. G. S. Middleton, (*b*) Dr. T. K. Monro, (*c*) Dr. J. M. Cowan; Clinical Surgery, (*a*) Mr. John Barlow, (*b*) Mr. J. H. Pringle, and (*c*) Dr. John A. C. Macewen; Hæmatology, Dr. W. K. Hunter; Surgical Diseases of the Urinary Organs, Dr. David Newman; Clinical Examination of the Urine, Dr. John Henderson; Gynæcology, (*a*) Dr. G. Balfour Marshall; (*b*) Dr. W. D. Macfarlane; Diseases of the Ear, Dr. J. Kerr Love; Diseases of the Eye, Dr. A. Maitland Ramsay; Diseases of the Skin, Dr. A. Morton; Diseases of the Throat and Nose, Dr. Robert Fullerton; Electro-Therapeutics, Mr. James R. Riddell; Gynæcological Pathology, Dr. Balfour Marshall and Dr. W. D. Macfarlane; Operative Surgery, Mr. Henry Rutherfurd and Mr. James Battersby; and Bacteriology, Mr. David McCrorie. It will facilitate arrangements if those desirous of joining any of these classes will at once communicate with Dr. J. M. Thom, superintendent, who will supply any further information. The attendance in many of the classes is limited as to number, and members are enrolled in the order of their application.

The Milk Standard.

A correspondent of the *Glasgow Herald* of August 14th gives an interesting exposition of the legal position of milk vendors with reference to the recent milk prosecutions. In the 1875 Act, Section 6, it is an offence for anyone to sell an article of food (e.g., milk) "which is not of the nature, substance, and quality of the article demanded by the purchaser." The Act says nothing whatever about a "standard" for milk, nor do the Amending Acts of 1879 and 1887. It was not until 1899–1900 that Parliament, through the Board of Agriculture, fixed the present standard. The committee appointed by the Board of Agriculture at that time decided that milk containing less than 3 per cent. of fat, or less than 8·5 of non-fatty solids, and skimmed or separated milk (other than condensed milk) containing less than 9 per cent. of total solids, should be presumed to be "not genuine" until the contrary was proved. According to this the milk-vendor's position should be that he clears himself if he proves that the milk is as the cows naturally gave it. This was not the sheriff's finding, however, in a recent case in Scotland. He held that if the milk did not come up to the standard the Act was infringed even if the seller proved that he had not tampered with the milk in any way. It goes without saying that those interested in the welfare of the community are anxious that the milk distributed should be of a good quality, but, as the *Herald* points out, the law as yet only goes the length of demanding that the public shall get the genuine and natural product of cows kept under natural conditions. It seems only fair, therefore, that however laudable their motives may be, those interested in prosecutions should not legislate in advance of, but should keep pace with, the legislature.

Montrose Royal Asylum: the Prevalence of Pulmonary Tuberculosis.

A meeting of the Montrose Asylum Board was held on August 10th, when the report of Dr. John Macpherson, Commissioner in Lunacy, was submitted. Dr. Macpherson pointed out that on the occasion of his last visit an unusually large number of patients were suffering from pulmonary tuberculosis. On inquiry it was found that 18 inmates, 11 men and seven women, were tuberculous, many of them being in an active and infectious stage of the disease. These patients were, so far as possible, isolated in single rooms, but no provision was made for their treatment in the open air. It was recommended that the existing verandahs on the south front of the hospital should be altered in order to permit beds being placed there in a transverse position. If this were done it was computed that about 20 patients might be treated in the open air, and it was believed that in this way the progress of the disease might be effectually checked. Dr. J. G. Havelock, physician superintendent at the asylum, said that the matter had been carefully considered for a long time. Among the institutions which he had visited was an asylum in Glasgow where the district board of lunacy had erected a fine sanatorium, splendidly equipped in every respect for the treatment of pulmonary tuberculosis. He understood that matters had been followed by very satisfactory results, but what deterred him from bringing the matter before the Montrose board was the enormous expense which the sanatorium would require for the erection and maintenance. He considered that Dr. Macpherson's report was an eminently reasonable one. Ultimately the report was remitted to the asylum committee for consideration.

The Inverness-shire Sanatorium Bazaar.

There has just been published "The Book of the County of

Inverness," an interesting volume issued on behalf of the Inverness-shire sanatorium bazaar which is to be held at Beaufort Castle, Beauly, on August 21st and 22nd. The Hon. Margaret Fraser of Lovat, who founded the sanatorium, is at the head of the promoters, who are prominent Inverness-shire families. The object of the bazaar is to raise an endowment fund sufficient to insure adequate treatment for all natives of Inverness-shire afflicted with consumption. The sanatorium, which has a beautiful site in the vicinity of Fort Augustus, has now been open for eight months. The book of the bazaar is embellished with a number of fine photographs, chiefly of the northern aristocracy connected with the bazaar and their seats. There are short stories by the Duchess of Sutherland, the Countess of Cromarty, and Mrs. Fraser of Reelig, while humorous sketches by E. T. Reed, René Bull, John Hassall, Tom Browne, and the late Phil May help to brighten the pages.

Laurencekirk District Committee: Notification of Births Act, &c.

A meeting of the Laurencekirk district committee was held in the town-hall on August 10th. A communication from the Convention of Royal Burghs, urging the committee to adopt the Notification of Births Act, 1908, for the district was submitted. The chairman said that the question had already been before the committee which had decided that it was unnecessary to adopt the Act for the district. He did not think that there was any reason why they should depart from that finding, adding that the Act was one which applied more to crowded centres of population than to rural districts. He moved that the letter lie on the table, and this motion was approved. A circular from the Local Government Board with regard to administrative control of pulmonary tuberculosis was submitted. The medical officer, Dr. W. A. Macnaughton, stated that the circular followed a previous communication, in which consumption was declared to be a contagious disease, and in which it was proposed that it should be included in the Notification Act. But in the first circular it was proposed that after notification had been adopted some steps should be taken to deal with the cases in the way of a sanatorium or something else of that sort. In the present circular notification was recommended only. The Local Government Board did not now press for further action, but the probability was that once notification was adopted that would follow. Medical opinion, at least so far as the British Medical Association was concerned, was about equally divided on the subject of notification, and therefore he thought that the committee might delay coming to a decision until it saw what other counties did. The chairman moved as suggested by the medical officer and the motion was carried unanimously.

August 18th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Tuberculosis Prevention (Ireland) Bill.

On August 27th a very important meeting is to be held in Dublin, summoned by Lady Aberdeen as president of the Women's National Health Association of Ireland, to hear reports as to the past year's work in the campaign against tuberculosis and to consider Mr. Birrell's Bill for the Prevention of Tuberculosis in Ireland. Delegates have been summoned from the various medical bodies and societies, and from all the urban and district councils, as well as from the various organisations engaged in the anti-tuberculosis fight. It is hoped that at this meeting there will be some constructive criticism, for there has been so far too much of the other sort. It is absurd to represent this Bill as being merely one to provide for compulsory notification; it goes much further, and anyone reading it will see that it has to do (1) with notification and disinfection; (2) with the provision of hospitals and dispensaries by county councils; and (3) with such necessary sanitary provisions as lectures and information relating to tuberculosis, appointment of bacteriologists, power to take samples of milk and milk products, appointment of veterinary surgeons, power of urban district councils in relation to dairies outside the district, &c. No doubt in this Bill there are many points open to discussion, and amendments can be made and clauses added, but those who criticise the Bill and who have given no help in the great movement which during the past year has led to the awakening of the people on the whole subject of tuberculosis must, if they continue to object to it, tell us how to get rid of a preventable disease which causes annually in Ireland the deaths of almost 12,000 people. Sneering at compulsory notification, at "sterilised" milk, and at the poverty of the people will not get rid of tuberculosis in Ireland. A whole year has been spent in discussion; it is now time to act.

The "Class" Treatment of Tuberculosis.

An American physician, Dr. Joseph Pratt of Boston, explained to a large audience last week a scheme called the "class" treatment of tuberculosis. The first class was organised in July, 1905, and aimed at securing supervision of the patient by the visitation of nurses, the keeping of a record book, and weekly assembling of the class. The results he described to be encouraging, and Lady Aberdeen, who presided at the meeting, expressed the hope that the system would be given an early trial. Dr. Pratt, by the way, pointed out that in Boston during the past three years they had had more cases of tuberculosis among the Russian Jews than among the Irish, notwithstanding the alleged special susceptibility of the latter and comparative immunity of the former.

"Ballymaclinton."

Ballymaclinton, the Irish village at the Franco-British Exhibition, has aroused the criticism of Mr. F. W. Crossley, the leader of the Irish Tourist and Shannon Development movements. He objects to the prominence given to the consumption crusade, and thinks that this will give people a false and exaggerated idea of the prevalence of tuberculosis in Ireland. Mr. Robert Brown, as one of those responsible for the show, replies that if there had been no tuberculosis there would have been no Ballymaclinton, and admits that it was in the hope of making money to help on the crusade against consumption that his brother and himself have been expending their time and capital. He adds: "Whether we succeed in this remains to be seen; at any rate, we have shown hundreds of people from all parts of the world what Lady Aberdeen has taught us in the past year in using itinerant tuberculosis exhibitions as a means of health propaganda. As a result similar crusades are going to be started in various parts of the United States, in Newfoundland, and probably in England." A rational and satisfying answer, most people will think.

A Research Laboratory for the Irish Department of Agriculture.

At the recent meeting of the Irish Council of Agriculture a resolution was passed expressing the opinion that "in view of the annual loss sustained by stock-owners through the increasing ravages of germ diseases the Council is of opinion that the time has arrived when there should be a sufficiently endowed research laboratory in Ireland established by the Department of Agriculture, the Council feeling that we are quickly moving into an age when prevention ought largely to take the place of curative treatment for many diseases affecting our flocks and herds." The rapidly growing recognition of the relationship between some at least of the most important diseases of man and the lower animals has been of late conspicuously illustrated by recent advances in pathological research, and excellent work has been proceeding from the Royal Veterinary College ever since its foundation, so that the resolution of the Irish Council of Agriculture may bear fruit.

Hard Times in Belfast.

At a meeting of the Belfast Board of Guardians, held on August 11th, it was reported that there were 3773 inmates in the Belfast workhouse, that is 500 more than there were at the corresponding period of last year. There are an immense number out of work at present in Belfast.

Unqualified Midwifery Nurses.

At an inquest held in Belfast on August 12th on the death on the 3rd of an unmarried woman from septicæmia

following childbirth, it appeared that the patient had been attended by a "handy woman" who acts as a nurse but has never received any regular training. Medical assistance was subsequently called in but without any avail. Dr. J. W. Ritchie gave evidence that death was due to septicæmia and that the disease could be carried from one patient to another, and that in his opinion the nurse must have conveyed the infection from a previous case. The coroner said there had been a number of deaths in the district of women who had been attended by unqualified nurses and the state of affairs was becoming very serious. He elicited from the woman that at the time when she attended the deceased she was also in attendance upon another woman who was ill after her confinement, and he said that he had reprimanded her on a previous occasion for attending to cases where a medical man had not been called in. He now warned her she must not attend to such cases again or she would incur serious trouble. The woman having given this undertaking the jury returned a verdict in accordance with the medical evidence. It appeared from what the coroner said that in the previous case in which this woman was reprimanded by him the patient died from hæmorrhage, and at that time the unqualified midwife promised to give up the business.

August 18th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Diagnosis of Erysipelas.

AT a meeting of the Hospitals' Medical Society on July 31st M. G. Milian described three signs for the diagnosis of facial erysipelas, which is often so difficult a matter. The first he calls the sign of greatest peripheral intensity, which depends on the fact that there is always the greatest redness, swelling, and pain on pressure at the outer border of the affected area; this sign is especially valuable in the differentiation of erysipelas from an ordinary inflammation, as, for instance, that due to suppurative dacryocystitis, a dental abscess, parotitis, or mumps; the observer must not be misled by swelling of the eyelid, which takes place very readily on account of the thinness of its integuments. The second sign concerns the ear: on account of the close adherence of its skin and perichondrium, abscesses, inflammatory conditions of the cheek, parotid swellings, and mumps invariably stop short of the pinna. Erysipelas, on the other hand, being a dermatitis, spreads in the thickness of the skin itself and attacks the skin of the pinna as readily as that of any other part, so that the ear becomes swollen, red, shiny, and tender. The third sign is that of tenderness on pressure, which is indicated by a facial contortion of pain and a sudden drawing back of the head when any spot on the affected area, and especially on its periphery, is touched. This sign is also useful in mapping out the limit of the erysipelatous skin on parts hidden by hair. Dacryocystitis and dental abscesses only give rise to tenderness on pressure over the central part of the collection of pus and never at its periphery.

The Transmission of Tuberculosis by Desiccated Sputum.

At a meeting of the Academy of Sciences on July 27th M. Kuss discussed the danger of the dissemination of tuberculosis by desiccated sputum. His investigations have led him to believe that when conditions are favourable tuberculous sputum dries rapidly in several days, and very easily takes the form of a fine dust which is stirred up particularly by sweeping and "dusting." It is wrong to think that this very volatile dust is always inert, for tuberculous sputum which has dried up of its own accord in a dark corner retains considerable virulence after it has become a fine dust. It is quite easy to infect animals with tuberculosis by making them inhale tuberculous sputum which has been pulverised artificially, as easy, in fact, as it is to infect them by moist particles. The pulmonary lesions due to dry dust are generally less confluent than those produced by moist infected matter. Simple sweeping of carpets contaminated with tuberculous sputum stirs up a virulent dust sufficiently fine and light to be inhaled by guinea-pigs and these animals are at once attacked with tuberculosis if the desiccation has occupied eight days or more. The lesions thus produced are typical of infection by inhalation, and, other things being equal, are much more virulent than are lesions produced by the subcutaneous injection of a corresponding amount of tuberculous dust.

The Eighteenth Congress of French Alienists and Neurologists.

This congress met at Dijon in the town-hall from August 3rd to 10th. The Mayor took the chair at the opening meeting and welcomed the congressists warmly. Subsequently Dr. Cullère, the President of the Congress, thanked the town of Dijon for its welcome and the Rector of the University for the hospitality offered within its precincts. He then read a very learned paper on the Psychology of the Court of Louis XIV. In this clinical and authoritative study, which showed great powers of observation, he contended that at the period in question there were no records of infective psychoses, of general paralysis, or of alcoholism, but that there were cases of mental instability and hereditary degeneration. These conclusions show that the exogenous element is not the only factor in the causation of insanity and that the "soil" and heredity must be given first place. The principal other subjects with which the congress dealt were, Mental Troubles Resulting from Disorders of the Ductless Glands, opened by M. Laignel Lavastine and discussed by M. Régis, M. Claude, M. Léopold-Lévi, M. Grasset, M. Roubinovitch, M. Léri, M. Ricqué, M. Chartier, and M. Sollier, and the Clinical Varieties and Diagnosis of the Neuralgias, opened by M. H. Verger and discussed by M. Fernand Lévy, M. Claude, M. Chartier, and M. Hartenberg.

Emaciation among Dyspeptics.

There are some dyspeptics who may appear emaciated but whose weight is above the standard physiological weight, as is suggested by the unexpected occurrence of emaciation which accompanies the relief of the dyspepsia. This reduction of weight can be observed as long as the subject remains in good health. M. Leven made a statement to the Society of Biology on the subject at the end of last month and exhibited two cases in support of the existence of the condition. One patient, aged 52 years, 1 metre 62 centimetres in height, weighed before treatment 61 kilogrammes 200 grammes but after relief of his symptoms he weighed no more than 54 kilogrammes 600 grammes. The other patient, aged 28 years, who was 1 metre 70 centimetres in height at the commencement of the treatment and weighed 71 kilogrammes after treatment weighed only 56 kilogrammes 800 grammes, though he was taking nourishment freely and digesting it well. There is practical difficulty in recognising the occurrence of this peculiar emaciation, for when a patient of considerable age remains thin despite the taking of sufficient nourishment there may be a disposition to suspect the existence of malignant disease, while really there is present a form of emaciation which is of favourable prognosis.

August 18th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

State-supplied Quinine.

IN terms of the law of May 19th, 1904, "per diminuire le cause della malaria" (to minimise the causes of malaria) the State undertook to supply unadulterated quinine at a low rate of profit to the communes visited by that scourge. The undertaking, as the readers of THE LANCET were from time to time informed, had many obstacles to encounter. One of these was the ignorance of the population affected and its consequent reluctance to avail itself of the prophylactic or remedy. Another was the "preconcetto" (anticipation) that the State-supplied quinine would injure the "industriali" (manufacturing houses), foreign and domestic, in their special business. Both obstacles have practically sunk to the vanishing point. The population of the malaria-haunted localities is now convinced of the supreme value of the drug and the communes intrusted with its sale or distribution have no difficulty in getting it administered. The opposition of the "industriali" has gradually died down, all interested attempts to decry the purity and efficacy of the State preparation having signally failed. On the other hand, the State has not only seen the beneficent results of its intervention placed more and more in evidence but is now in the gratifying position of having

profited financially by its experiment. According to the returns just issued in the official report of the Ministre delle Finanze its gains for the year have been, in Italian lire, 462,890 · 94. The demand for the drug, eminently palatable as this has become in the form of "cioccolate" (chocolates), has increased its output by 2,476,685 kilogrammes, "a confirmation," says the Government report, "of the progress effected by the philanthropic undertaking in behalf of the malaria-visited poor and an encouragement to intensify and improve upon the beneficent action already taken."

A Plea for the Fly.

"Is there no Darwin secundus," asks an Italian physician, "to do for the fly what the author of the 'Origin of Species' did for the worm—vindicate its place in the economy of nature and mitigate, in a conservative sense, the indiscriminate destruction with which it is threatened?" For there are "flies and flies"—a distinction recognised by no one more clearly than by the great nature student of the seventeenth century, Francesco Redi. True, there is the fly that deposits its larvæ in the living flesh of the human subject—there is the African tsetse, for example, which by its puncture can produce the death of cattle, and, as if that were not enough, can inoculate mankind with a microscopic parasite, the "trypanosoma," with its sequela of the sleeping sickness. In presence of such lethal pests and even of the comparatively innocuous but often irritating common fly, "it seems," says the Italian physician, "cruel irony to credit the insect with any useful function whatever; but the fact remains that our troublesome and vagabond little enemies (*molesti e vagabonde nemici*) have a great rôle to perform in the economy of nature, in the maintenance of the biological equilibrium. Their task is the humble one of the aerial scavenger—to transform the immense quantities of effete organic substances which living organisms are continually giving back to nature." What the human subject would otherwise inhale in its crude toxicity the intervening fly absorbs and removes from the area of respiration, a fact which explains the prevalence of epidemics when from some cause the fly has been exceptionally scarce. Nor is it in the animal world alone that the fly has a duty to perform. "Some species," says the Italian nature student already mentioned, "have a special function in the vegetable kingdom in minimising the scourge of the caterpillar, so destructive in the market garden or the floral nursery. They lay their eggs on that parasite and from these eggs come the larvæ which slowly but surely devour it. When the fly multiplies to excess it is kept down by the insect eating birds, which also have a part of their own to play in the biological equilibrium." Again, the indiscriminate slaughter of birds (a fatal practice which has long engaged the attention of the Italian legislature) has its nemesis in the unchecked multiplication of their special pabulum, including the fly itself, which in Italy develops and musters in a force corresponding to the destruction of its natural enemy.

> "Nothing in this world is single,
> All things by a law divine
> In one another's being mingle,"

says Shelley. Nature, according to the "Novum Organum," is to be controlled and utilised only by obeying her laws, the hasty and crudely inspired interference with which she never leaves unavenged. Let us beware, then, concludes the writer whom I have already quoted, of the indiscriminate extinction of one of nature's servants, the *musca vulgaris*, lest in our impatience of

> "the ills we have
> We fly to others that we know not of."

August 15th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The Mohmand-Khyber Field Force: General Willcocks's Despatches.

THE Government of India has published the despatches received from Major-General Sir James Willcocks, K.C.M.G., C.B., D.S.O., describing the recent operations on the Mohmand border, in the Khyber, and the country of the Mohmands, extending from the early part of April to the end of May. Before the general advance into the Mohmand country on May 13th, owing to the gradual spread of cholera amongst the troops and followers, several changes had to be made in the constitution of the brigades. No details of medical interest appear in the despatches, General Willcocks confining himself to stating that "the medical arrangements were all satisfactory and the good work done by the Army Bearer Corps was most praiseworthy."

Medical Men Mentioned in Despatches.

"Colonel H. R. Whitehead, R.A.M.C.," Principal Medical Officer of the force, "did exceptionally good work," and "I recommend the following officers for a reward for their distinguished service in the field:—Medical services: Major O. R. A. Julian, C.M.G., R.A.M.C. The undermentioned warrant officer is brought to notice for exceptionally good work:—First-class Assistant Surgeon J. Lee, Indian Subordinate Medical Department."

Casualties in Action.

General Willcocks states that the total casualties in action, &c., sustained by the force amounted to 52 killed (or died from wounds) and 205 wounded of all ranks; whilst the enemy lost about 450 killed. Of the officers killed, two died from gunshot wound of the head and two from gunshot wound of the chest. Two officers died from gunshot wound of the abdomen and one from gunshot wound of the thigh. Nine officers wounded who required hospital treatment are classed as two dangerous (both gunshot wound of the chest), three severe (all three gunshot wound of the thigh), and of the remaining, three as slight gunshot wounds of the arm and one gunshot wound of the skull. Of the non-commissioned officers and men 29 were killed, 13 died from wounds, and 177 were wounded, and of the followers 2 were killed, 1 died from wounds, and 19 were wounded. In no instance was anyone missing as prisoner or otherwise from the force. The non-commissioned officers and men killed or died from wounds are classed as follows: gunshot wounds of the head, 16; chest, 10; abdomen, 7; neck, 2; thigh, 1; head and chest, 2; back and abdomen, 1; and multiple sword-cut wounds, 3. Those whose wounds did not prove fatal are classed as follows: gunshot wounds of the head, 33; neck, 4; abdomen, 3; chest, 8; thigh, 24; wrist, 6; leg, 31; arm, 32; shoulder, 11; foot, 10; back, 2; fingers, 12; groin, 1; fracture of the thigh, 1; and other wounds—fingers (from explosion), 1; foot (sword-cut), 1; contusion of the knee, 1; scalp, 2. The wounds amongst followers are classed as—gunshot wound of the neck, 2; head, 3; leg, 4; thigh, 3; chest, 1; arm, 1; foot, 3; (crushed by horse) leg, 1.

Remarks by Indian Press.

It is to be regretted that an attempt has been made by some irresponsible correspondents of certain Indian papers to discredit the medical arrangements of the Mohmand expedition. No definite charges or data are given, but it has been hinted that proper medical arragements for the treatment of the sick and wounded did not exist whereby undue suffering and exposure resulted. Full inquiry has been made into these assertions and it is a pleasure to record that they are without a foundation of truth. On the contrary, there is a general consensus of opinion that the medical results of the campaign have been very good. Nearly all wounds have healed excellently and there was very little septic trouble. General Willcocks has himself written to one of the papers which published a calumnious account of the medical arrangements, denying all the charges brought in that article and indicating the manner in which the medical service of his expedition performed its duties.

Medical Registration.

A public meeting of the medical practitioners of Calcutta and its neighbourhood was held on July 6th, at the hall of the Calcutta University Institute when a large number of medical men attended. Dr. Kailash Chandra Bose, Rai Bahadur, C.I.E., presided. The meeting discussed the question of preventing the growth of bogus medical institutions and various other questions in connexion with some abuses which have sprung up there. The following motion was adopted by a majority:—

> That the time has come for considering the question of preventing the granting of degrees which are the properties of the Indian universities by a Medical Registration Act or otherwise, and also to take steps to safeguard the interests of persons practising the system recognised by the Indian universities.

A committee was appointed to consider the questions in all

their details and to report as soon as possible to another meeting of the profession. A subscription list was opened to meet the necessary expenses.

Malarial Fevers in the Army.

There is, no doubt, an increased tendency to diagnose only those cases as malaria in which parasites are found in the blood and to describe other cases of fever of uncertain cause as simple continued fever. But the prophylactic use of quinine is now pretty general and it is well known that very few parasites are to be found in the peripheral blood after a few doses of this. Many of the admissions, too, are for relapses in which parasites are often scanty, and in addition the "personal equation" is a factor in finding parasites when they are few in number. It must therefore be that a considerable number of cases of malaria are probably returned as simple continued fever. Another cause of diminution of the returns for malaria during the last five years is that since September, 1903, the system of treating men out of hospital has been in force, and this no doubt affects the incidence of malaria more than that of most other diseases, for slight cases of fever are among those most frequently so treated. Of 3611 cases in which the species of the infecting parasite was determined last year by microscopic examination the percentage in which each parasite was found was: benign tertian, 79·4; malignant tertian, 20·24; and quartan, 0·36. A few cases of mixed infection were found. The relative proportions between the malignant tertian parasites varied within very wide limits in different stations and showed no apparent relation to the geographical position of the stations.

Preventive Measures.

On account of their number and size the abolition of breeding-places of mosquitoes, except on a small scale immediately around barracks, is not as practicable as was once thought. Large excavations ("borrow pits") made by digging earth for building the lines of native troops and servants' houses, exist in almost all cantonments and are very favourable breeding-places for mosquitoes. The filling in of these costs large sums of money, but it is to be hoped that before long it may be found practicable to put a stop to the further digging of these in or near cantonments for the construction of new buildings. Some stations contain large numbers of tanks which it is almost impossible to do away with. Surface drainage is in almost all cantonments extremely defective, and on account of expense improvement is slow, but more attention is now being paid to this. Irrigation by open channels for watering gardens and agricultural land exists in certain stations and these channels are among the most favourable breeding-places for the species of anopheline mosquitoes which carry malaria. In Lahore cantonment irrigation has been stopped since August, 1905. The prophylactic use of quinine is carried out in most stations. The method generally adopted has been to give ten-grain doses on two successive days weekly. In addition to this, men who have suffered from malarial fever have, on discharge from hospital, received continuous treatment with quinine for a month or more. The treatment of natives suffering from malaria who live near barracks has also received attention. Steps are being taken to introduce a better pattern of mosquito net for hospitals and to increase the number allowed. At Rawal Pindi the 10th Hussars, who were suffering badly from malaria, were removed into camp about one and a half miles from their barracks with good results. The troops stationed in the fort at Delhi suffer severely from malaria during the autumn on account of the fort being situated on the bank of the Jumna where intermittent flooding of large tracts of land leaves innumerable pools for mosquitoes to breed in, while on the other side it is bordered by the city. The British troops are now, in September, moved annually into camp on the Ridge, about a mile from the river and the city.

Removal and Disposal of Sewage.

It is now almost universally recognised that the existing methods of sewage removal and disposal constitute the most important factor in the spread of enteric fever and dysentery in India. The system is practically a pail system with the almost nominal use of dry earth; the contents of the latrine pans are emptied into receptacles at the latrines and from these into carts, in which they are removed and trenched, often not more than half a mile to a mile from barracks. The earthen floors of the latrines and urinals must be frequently contaminated by infected excreta. To prevent the dissemination of this infected dust by wind, or through its being attached to boots, &c., non-absorbent floors have been sanctioned for latrines and have been laid down in several of the larger stations, and steps are now being taken to introduce new type plans of latrine and urinal; both will have impermeable floors. The results of the trials which have been carried out of substituting a solution of a disinfectant for earth in the latrine pans have been referred to when speaking of enteric fever. It is thought that, pending the introduction of water carriage of sewage, which is no doubt the only satisfactory solution of the sewage problem, this is likely to prove less dangerous than the present methods. Further trial applied to all the British troops at 12 of the largest stations is to be carried out. The daily oiling of urine troughs has been found to reduce greatly the deposit of urine salts on them and so to lessen the offensiveness. This is now being introduced generally. In order to obviate the dangers of trenching sewage, among the chief of which are that the soil is often dry and sandy and is scattered about cantonments by winds and that flies are in many stations bred in enormous numbers in the trenching grounds, an experiment has been carried out during the year at Meerut of biological treatment. The object aimed at has been to get rid of the solids and produce an effluent easily dealt with by irrigation on even poor land without causing it to become "sewage sick"; as it does not reach any water-course a highly purified effluent is not necessary. The plant consists of a septic tank, in which three gallons per head of water are added, and a percolating filter, the area of which, in proportion to the population dealt with, is considerably less than that usually allowed. The initial cost is small, the recurring cost not more than that of trenching, and the results, as regards dust and the breeding of flies, entirely satisfactory, while the financial return compares favourably with that obtained by trenching. In hill stations the disposal of excreta is difficult, for the reasons that suitable land is seldom available for trenching and there is not sufficient water for biological methods. Incineration seems for the present to offer the best solution of the difficulty. This has been carried out for some years at several hill stations, but the patterns of destructor so far tried have not been entirely satisfactory. A Horsefall destructor was obtained from England and has been working at Ranikhet during the year. The results have been good, though it must be recognised that this is an expensive method of disposing of sewage and only applicable where more economical methods cannot be used with safety to health.

July 23rd.

Obituary.

JOHN THOMAS JACKSON, M.R.C.S. ENG., L.S.A.

ON August 9th there died in Hampstead a medical practitioner whose age and infirmities had led him some years ago to retire from active practice but whose keen interest in his profession and courteous kindliness to his patients will keep the memory of an old and valued friend alive in a wide circle of residents in North London. Mr. John Thomas Jackson obtained his qualification of L.S.A. as far back as 1841 and was enrolled as a Member of the Royal College of Surgeons of England in the following year. He had been educated at St. Bartholomew's Hospital where he became house surgeon to Mr. Stanley after his qualification. He gained further experience as a resident officer at the Liverpool Northern Hospital. In 1846 he joined Mr. John Jefferson in practice at Highbury and remained in that district for nearly 60 years in the exercise of a busy general practice. When he died he was the oldest surviving member of the Islington Medical Society. He was a quiet and unostentatious man and combined with an excellent knowledge of his work a staunch loyalty to his professional brethren and to the honourable traditions of family medical practice, in which his success was conspicuous. Amongst his earlier patients were the family of Mr. Joseph Chamberlain, when that distinguished politician

was still a young man. Mr. Jackson had not a strong "constitution"; he suffered for many years from various manifestations of gout and rheumatism and was periodically attacked by influenza. But through all his physical ailments as well as through heavy personal troubles he maintained a cheerful face and a sympathetic concern for other people's misfortunes. He kept this serenity of spirit until his peaceful end relieved him from the increasing infirmities of old age. He remained keenly attached to the district in which his life-work was done and, as we have said, Highbury will not readily forget the man who did such good work in its midst.

EDWARD EVAN MEERES, M.D. LOND., M.R.C.P. LOND., M.R.C.S. ENG., L.S.A.,

CONSULTING PHYSICIAN TO THE PLYMOUTH PUBLIC DISPENSARY.

Dr. Edward Evan Meeres died at his residence, St. James'-place, Plymouth, on July 29th, in his seventy-third year. He was born in London where his father practised as a surgeon. He received his early education at King's College School, afterwards entering the King's College Hospital Medical School, where he secured the Medical and Warneford scholarships. He took the qualifications of M.R.C.S. Eng., and L.S.A. in 1857 and graduated M.D. of London in 1859, and in 1881 he was admitted M.R.C.P. of London. Dr. Meeres at first practised in London and was at one time senior assistant physician to the Metropolitan Free Hospital and subsequently he practised in the Isle of Wight and at Melksham (Wilts). He went to Plymouth 35 years ago and shortly afterwards was appointed physician to the Public Dispensary in that town; he was highly esteemed in the "Three Towns." Dr. Meeres was an accomplished musician, and in his early days was a member of Hullah's celebrated choir in London. The deceased leaves four sons and four daughters, with whom much sympathy is felt.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Kotelmann of Homburg, formerly editor of the *Zeitschrift für Schulgesundheitspflege*, at the age of 69 years. He was originally a pastor and a master in a classical public school but then turned his attention to medicine, qualifying at the age of 37 years.—Dr. F. J. Shadd, professor of therapeutics and materia medica in Harvard University.—Dr. G. J. Preston, professor of physiology in the College of Physicians and Surgeons, Baltimore.

Medical News.

FOREIGN UNIVERSITY INTELLIGENCE.—*Albany (Medical College):* Dr. Andrew MacFarlane has been appointed Extraordinary Professor of Medical Diagnosis and Forensic Medicine.—*Baltimore (Johns Hopkins University):* Dr. Adolph Meyer, Professor in Cornell University Medical College, has been appointed Extraordinary Professor of Mental Diseases.—*Berlin:* Dr. Robert Meyer, who has done excellent original work in gynæcological histology, has been granted the title of Professor; Dr. Gustav von Bergmann has been recognised as *privat-docent* of Medicine; and Dr. Paul Bartels as *privat-docent* of Anatomy and Anthropology.—*Budapest:* Dr. Karl Hoor, Professor of Ophthalmology in the University of Clausenburg, has been appointed Director of the newly established Ophthalmic Clinic. Dr. Stefan Toth, *privat-docent* of Gynæcology, has been promoted to an Extraordinary Professorship. Dr. Eugen Kopits has been recognised as *privat-docent* of Orthopædic Surgery; Dr. Eugen Polya as *privat-docent* of Surgical Anatomy; and Dr. Bela Fenyvessy as *privat-docent* of Hygiene.—*Chicago (North-Western Medical School):* Dr. Frederick Menge has been appointed Extraordinary Professor of Laryngology and Rhinology in succession to Dr. W. E. Casselberry, resigned.—*Florence:* Dr. Alessandro Bertino of Parma has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Freiburg:* Dr. Brünings, formerly of Zürich, has been recognised as *privat-docent* of Laryngology and Rhinology.—*Moscow:* Dr. N. I. Pobiédinski, Extraordinary Professor of Midwifery, has been promoted to an Ordinary Professorship.—*Munich:* Dr. Jussuf-Bey Ibrahim of Heidelberg has been recognised as *privat-docent* of Children's Diseases and Dr. Gustav Freitag as *privat-docent* of Ophthalmology.—*Naples:* Dr. Michele Jungano has been recognised as *privat-docent* of Urology and Dr. Alberto Benedetti as *privat-docent* of Ophthalmology.—*Oporto:* Dr. Oliveira Lima has been appointed Assistant Professor of Surgery.—*Rennes:* Dr. Ch. Lefeuvre, jun., has been appointed Professor of Physiology.—*Rio de Janeiro:* Dr. Octavio Rego Lopes has been appointed Assistant Professor of Ophthalmology.—*Rome:* Dr. Andrea Cosentino has been recognised as *privat-docent* of External Pathology and Dr. Giuseppe Lorenzo Giunti as *privat-docent* of Medical Hydrology.—*St. Petersburg (Women's Institute of Medicine):* Dr. G. Biélonovski has been recognised as *privat-docent* of Bacteriology.—*Strasburg:* Dr. Léon Blum has been recognised as *privat-docent* of Medicine.—*Tübingen:* Dr. Karl Henschen has been recognised as *privat-docent* of Surgery.—*Vienna:* Dr. Josef Wiesel has been recognised as *privat-docent* of Medicine; Dr. Erwin Strassky as *privat-docent* of Psychiatry and Neurology; and Dr. Wilhelm Wallisch as *privat-docent* of Odontology.

DEATH OF A CENTENARIAN.—The *Times* of August 13th announces the death at Mapledurham on August 8th of Hannah Hearn, for more than 30 years matron of Denmark-hill Grammar School, who had nearly reached the 103rd anniversary of her birthday.

MIDWIFERY FEES AND THE CIRENCESTER BOARD OF GUARDIANS.—At the meeting of the Cirencester board of guardians held on August 10th it was decided with reference to fees payable to medical practitioners (other than the medical officers of the union) called in by certificated midwives to pay 1 guinea, but in more complicated cases 2 guineas or 2½ guineas would be allowed.

GALLANT RESCUE BY A MEDICAL MAN.—Dr. James Sholto Cameron Douglas, of Christ Church, Oxford, son of Mr. Claude Douglas, F.R.C.S. Eng, of Leicester, rescued a lady from drowning at Trevose, near Padstow, Cornwall, on July 31st. The lady was bathing in a dangerous current and would have been drowned had not Dr. Douglas gone to her assistance and brought her to shore.

BRISTOL ROYAL INFIRMARY.—At the half-yearly meeting of the governors of this institution, which was held recently under the presidency of Sir George White, the medical report stated that during the past six months 1747 in-patients were admitted and 20,227 out-patients were treated. The daily average number of in-patients was 235. The financial statement showed that the income was £8420; the expenditure amounted to £8416. The total adverse balance of the infirmary is now £3326.

DEVON EDUCATION COMMITTEE.—At the last meeting of the Devon education committee it was decided to grant £100 to the Devon and Cornwall Training Schools for Nurses at Stonehouse (Plymouth). It was also determined to take steps to appoint three medical inspectors of school children at a salary of £250 per annum respectively, with expenses, who would carry out the work under the supervision of the proposed new county medical officer of health.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—A vacation course, to be held during the first fortnight in September, has been arranged in connexion with the North-East London Post-Graduate College. A syllabus, which may be obtained from the Dean, gives particulars of clinical demonstrations, classes on clinical methods, the bacteriology of daily practice, and clinical pathology, together with clinical lectures and lantern demonstrations. The fee for the course is 1 guinea.

TAUNTON ASSOCIATION TO AID CONSUMPTIVES.—The first annual meeting of the friends of this society was held in Taunton on August 12th under the presidency of Dr. H. T. Rutherfoord. The medical report showed that ten patients had been treated at the Winsley Sanatorium during the past 12 months. The report stated that in response to the appeal for donations to purchase beds at Winsley Sanatorium three donors (Viscount Portman, Sir E. Boyle, and Mr. T. Penny) had given £900, which would purchase three beds. Money for procuring a fourth bed had been raised by public subscriptions, but the committee had

decided not to purchase this bed until it was assured of public subscriptions for the maintenance of the same. The financial statement showed a favourable balance of £32 on the "maintenance fund" and of £388 on the capital account for the purchase of the bed at Winsley.

CARDIFF INFIRMARY.—"Anonyma" has given £1000 towards the maintenance of a bed in the new wing of the Cardiff Infirmary.

MEDICAL MAGISTRATE.—The name of Mr. James Robinson, L.R.C.P., L.R.C.S., L.M. Irel., has been placed on the Commission of the Peace for the city of Cardiff.

PUBLIC HEALTH MATTERS IN SEYCHELLES.—The Governor of Seychelles, in his report on the Blue-book of the colony for the year 1907, states that the population on the last day of that year was estimated at 21,502—viz., 11,009 males and 10,493 females. The births numbered 688—31·99 per 1000—and the deaths 308—14·32 per 1000. The number of stillbirths was 50; the proportion of illegitimate births was 30 per cent.; there were 132 marriages; the density of the population was 13·83 per square mile. The mean temperature was 79·45° F., slightly higher than the average of the nine years previous. The average rainfall for the last 15 years had been 100·8 inches; the fall in 1907 was below the average but it was evenly and satisfactorily distributed throughout the year. The Victoria Hospital is the only general hospital in Seychelles. The excellent system of roads now maintained renders it unnecessary to establish a similar institution in South Mahé. The Victoria Hospital is central and well situated. The wards are airy and well constructed and the water-supply is pure and unlimited. There is a commodious dispensary adjacent and quarters are provided for the chief medical officer and for the three nursing sisters who belong to the Roman Catholic Society of St. Joseph de Cluny. The hospital is supplemented by the establishment of six outdoor dispensaries—viz., one at Victoria, under the direction of the chief medical officer; two, at Anse Royale and Anse Boileau respectively, serving the needs of South Mahé, under the direction of the assistant medical officer for that division; and three under the assistant medical officer for the Praslin district—viz., two on the Island of Praslin, at Baine St. Anne and Grand Anse, and one on the adjacent island of La Digue. The number of persons who attended for treatment at the outdoor dispensaries was 3263. As usual, the number of females attending (2471) greatly exceeded the number of men (792). The fullest confidence is felt in the ministrations of five medical men with British qualifications. The death-rate per 1000 in 1907 fell, as already stated, to 14·32, as compared with 17·28 in 1906. The average for the nine years previous was 16·84. Infantile mortality has fallen from an average of 127 per annum for a period of ten years and 147 in 1906, to 101 in 1907, owing to the absence of epidemics. Nine cases of beri-beri have been under treatment, involving three deaths; they were all traceable to the outlying islands. The assistant medical officer of South Mahé notes an increase in the number of cases of tuberculosis in his district. Influenza—or perhaps it may be dengue fever—has been prevalent, but no deaths were attributed to that malady. The supply of vaccine received from Europe by the monthly mails is of good quality and gives excellent results, the successful cases being over 99 per cent. Vaccination is compulsory. There are ten lepers in the home at Round Island. The medical officer in charge there is of opinion that leprosy is not on the increase, but his experience goes to show that there are families in which there is susceptibility towards this malady. Insane persons were sent until 1906 to the Government asylum of Mauritius, where six cases are still under treatment. The disadvantages of long transfer by sea in sailing vessels—for the regular steamers refuse insane passengers—are obvious, and the distance causes difficulties attending discharge of patients on probation. Moreover, the charge for maintenance is high, the cost of transport is usually expensive, and months have at times passed before an opportunity has occurred for the transfer of a patient to Mauritius. It has now been resolved to establish an asylum at Anse Royale under the care of the assistant medical officer of South Mahé, who has made a special study of mental diseases. An ordinance has been passed for the care and treatment of lunatics; temporary quarters are still in occupation, but the permanent asylum buildings will be completed this year.

BOOKS, ETC., RECEIVED.

BLAKISTON'S (P.), SON AND CO., 1012, Walnut-street, Philadelphia.

Pharmacology. The Action and Uses of Drugs. By Maurice Vejux Tyrode, M.D., Instructor of Pharmacology in the Medical School of Harvard University. Price $1.50 net.

CASSELL AND CO., LIMITED, London, Paris, New York, Toronto, and Melbourne.

Estimation of the Renal Function in Urinary Surgery. By J. W. Thomson Walker, M.B., C.M. Edin., F.R.C.S., Hunterian Professor of Surgery and Pathology, Royal College of Surgeons of England (1907); Surgeon in Charge of Out-patients at the North-West London Hospital and Hampstead General Hospital; Assistant Surgeon to St. Peter's Hospital. Price not stated.

CLARK, R. AND R., LIMITED, Edinburgh.

Clinical Studies. A Quarterly Journal of Clinical Medicine. By Byrom Bramwell, M.D., F.R.C.P.E., F.R.S.E. Vol. VI. Price not stated.

FALCONER, JOHN, 53, Upper Sackville-street, Dublin. BAILLIÈRE, TINDALL, AND COX, London.

Transactions of the Royal Academy of Medicine in Ireland. Vol. XXVI. Edited by James Craig, M.D., F.R.C.P.I., General Secretary, Physician to the Meath Hospital and County Dublin Infirmary. Price not stated.

METHUEN AND CO., 36, Essex-street, Strand, London, W.C.

First Year Physics. By Charles E. Jackson, M.A., Formerly Open Mathematical Scholar of Queen's College, Oxford; Senior Physics Master, Bradford Grammar School. Price 1s. 6d.

Examples in Elementary Mechanics, Practical, Graphical, and Theoretical. By W. J. Dobbs, M.A., Sometime Foundation Scholar of St. John's College, Cambridge; Author of "Elementary Geometrical Statics" and of "Elementary Statics." Price 5s.

The Prevention of Tuberculosis. By Arthur Newsholme, M.D., F.R.C.P., President of the Epidemiological Section of the Royal Society of Medicine, late Medical Officer of Health of Brighton. Price 10s. 6d. net.

PUTNAM'S SONS (G. P.), New York and London.

Insomnia and Nerve Strain. By Henry S. Upson, M.D., Professor of Diseases of the Nervous System in the Western Reserve University; Attending Neurologist to the Lakeside Hospital, Cleveland, Ohio. Price 6s. net.

SANITARY PUBLISHING COMPANY, LIMITED, 5, Fetter-lane, London, E.C.

By-Laws as to House Drainage and Sanitary Fittings made by the London County Council. Annotated by Gerard J. G. Jensen, C.E., and Another. Second edition. Price 3s. 6d. net.

SAUNDERS (W. B.) COMPANY, Philadelphia and London.

Adenomyoma of the Uterus. By Thomas Stephen Cullen, Associate Professor of Gynæcology in the Johns Hopkins University; Associate in Gynæcology in the Johns Hopkins Hospital. Illustrated by Hermann Becker and August Horn. Price 21s. net.

State Board Questions and Answers. By R. Max Goepp, M.D., Professor of Clinical Medicine at the Philadelphia Polyclinic; Assistant Visiting Physician to the Philadelphia General Hospital. Price 18s. net.

Medical Gynecology. By Samuel Wyllis Bandler, M.D., Fellow of the American Association of Obstetricians and Gynecologists; Adjunct Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital; Associate Attending Gynecologist to the Beth Israel Hospital, New York City. Price 21s. net.

SCIENTIFIC PRESS, LIMITED, 28 and 29, Southampton-street, Strand, London, W.C.

The Care and Nursing of the Insane. By Percy J. Baily, M.B., C.M. Edin., Medical Superintendent of Hanwell Asylum. Price 2s. 6d. net.

Science and Empiricism. By H. C. Daniel, Member of British Constitution Association. Price 1s. 6d. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ALDRIDGE, A. W., M.B., B.S. Durh., has been appointed Certifying Surgeon under the Factory and Workshop Act for the King's Norton District of the county of Worcester.

CARTER, THOMAS MORAVIAN, M.R.C.S., L.R.C.P. Lond., has been appointed a Medical Inspector of Schools for the Bristol Education Committee.

GREEN, THOMAS ARTHUR HEATHFIELD, M.D., C.M. Edin., L.R.C.S. Edin., has been appointed a Medical Inspector of Schools for the Bristol Education Committee.

HANRAHAN, J. A., L.K.Q.C.P. Irel., L.R.C.S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Hollymount District of the county of Mayo.

HUGHES, GERALD S., M.B., B.S. Lond., F.R.C.S. Eng., has been appointed Honorary Anæsthetist to the York County Hospital.

JAMES, PHILIP, F.R.C.S. Eng., has been re-appointed Surgeon to the Wellington Hospital, New Zealand.

KEELING, G. S., M.B., B.S. Cantab., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Attleborough District of the county of Norfolk.

MADDISON, WILLIAM THOMAS, M.D. Lond., M.R.C.S. Eng., has been appointed a Medical Inspector of Schools for the Bristol Education Committee.

MATTHEWS, CHARLES EDWIN, M.D. Durb., L.R.C.P. Edin., M.R.C.S., has been appointed Medical Inspector of Schools for the Borough of Tiverton (Devon).

MCFARLANE, J., M.B., Ch.B. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Dreghorn District of the county of Ayr.

O'MALLEY, D. J., M.D., M.S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Glenamaddy District of the county of Galway.

SIMPSON, H. C., L.M. & S. S.A. Lond., has been appointed Assistant House Surgeon to the Derbyshire Royal Infirmary, Derby.

STANLEY, DOUGLAS, M.D. Edin., M.R.C.P. Lond., has been appointed Examining Physician to the Birmingham Municipal Sanatorium.

WILLIAMS, EDWARD CECIL, M.B., B.C. Cantab., has been appointed a Medical Inspector of Schools for the Bristol Education Committee.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BEDFORD COUNTY HOSPITAL.—House Surgeon. Salary £100 per annum, with apartments, board, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £80 and fees.

BIRMINGHAM AND MIDLAND HOSPITAL FOR SKIN AND URINARY DISEASES, Birmingham.—Clinical Assistant. Salary at rate of 52 guineas per annum.

BRIDGNORTH AND SOUTH SHROPSHIRE INFIRMARY.—House Surgeon. Salary £100 per annum, with board and lodging.

BRIGHTON AND HOVE HOSPITAL FOR WOMEN.—House Surgeon. Salary £80 per annum, with apartments, board, &c.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road.—House Surgeon for six months. Salary at rate of £80 per annum, with board, lodging, and washing.

BRIGHTON, SUSSEX COUNTY HOSPITAL.—Third House Surgeon, unmarried. Salary £50 per annum, with apartments, board, and laundry. Also Resident Medical Officer to act as Locum Tenens for September. Honorarium £10 10s., with apartments, board, and laundry.

BRISTOL DISPENSARY.—Two Medical Officers.

BRISTOL GENERAL HOSPITAL.—House Surgeon for six months. Salary £80, with board, residence, &c.

BURY AND DISTRICT JOINT HOSPITAL BOARD.—Resident Medical Superintendent. Salary £250 per annum, with residence, board, and laundry.

BURY COUNTY BOROUGH.—Medical Officer of Health. Salary £300 per annum.

CARLISLE, CUMBERLAND INFIRMARY.—Resident Medical Officer. Salary at rate of £80 and £100 per annum, with board, lodging, and washing.

CHARTHAM, KENT COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £140, with board, quarters, attendance, and washing.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistant.

CLAYTON HOSPITAL AND WAKEFIELD GENERAL DISPENSARY.—Junior House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Honorary Medical Officer.

CUMBERLAND COUNTY COUNCIL.—Assistant Medical Officer of Health. Salary £250 per annum, and travelling expenses.

DEVONPORT, ROYAL ALBERT HOSPITAL AND EYE INFIRMARY.—Assistant Resident Medical Officer, unmarried, for six months. Salary at rate of £50 per annum, with board, lodging, and laundry.

DUBLIN, ROYAL VICTORIA EYE AND EAR HOSPITAL, Adelaide-road.—House Surgeon. Salary £40 per annum, with board and residence.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Resident Medical Officer. Salary £100 per annum, with board, residence, and laundry. Also Medical Officer to the Casualty Department for six months, renewable. Salary at rate of £100 per annum, with luncheon and tea. Also Assistant Physician.

ESSEX EDUCATION COMMITTEE, Chelmsford.—Two Medical Inspectors of Elementary School Children. Salaries £250 per annum and travelling expenses.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, London, S.E.—House Physician for five months, also House Surgeon for eight months. Salary in each case at rate of £60 per annum, with board, residence, and washing.

GOVAN DISTRICT ASYLUM, Crookston, near Paisley.—Second Assistant Medical Officer, unmarried. Salary £150 per annum, with rooms, board, laundry, and attendance.

HULL, VICTORIA CHILDREN'S HOSPITAL, Park-street.—Assistant House Surgeon (female). Salary £40 per annum, with board and laundry.

IPSWICH, IPSWICH AND EAST SUFFOLK HOSPITAL.—House Surgeon for six months. Salary at rate of £65 per annum.

ISLE OF SKYE, GESTO HOSPITAL, Edinbane.—Resident Medical Officer. Salary £200 per annum, with house, coals, light, and taxes.

KING'S LYNN, WEST NORFOLK AND LYNN HOSPITAL.—House Surgeon. Salary £100 per annum, with all found.

LEICESTER INFIRMARY.—Second House Surgeon. Salary at rate of £100 per annum, with board, apartments, and washing.

LEWES, EAST SUSSEX COUNTY COUNCIL.—Two Assistants for the Medical Inspection of School Children. Salary in each case £250 per annum, and travelling expenses.

LIVERPOOL INFECTIOUS DISEASES HOSPITAL.—Assistant Resident Medical Officer, unmarried. Salary £120 per annum, with board, washing, and lodging.

LIVERPOOL, MILL-ROAD INFIRMARY.—Assistant Resident Medical Officer. Salary £100 per annum, with board.

LOUGHBOROUGH AND DISTRICT GENERAL HOSPITAL AND DISPENSARY—Resident House Surgeon. Salary £100 per annum, with rooms, attendance, board, and washing.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury near Manchester.—Resident Medical Officer, unmarried. Salary at rate of £40 and £50 per annum. Also Assistant Medical Officer (non-resident) to Out-patients' Department (Gartside-street), for six months. Salary at rate of £100 per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park Place, Cheetham Hill-road.—House Surgeon. Salary £80 per annum, with apartments and board.

MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—Fourth House Surgeon for six months. Salary £25, with board and residence.

MONMOUTHSHIRE ASYLUM, Abergavenny.—Second Assistant Medical Officer. Salary £175 per annum, with board, apartments, washing, and attendance.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood, Middlesex.—Junior Resident Medical Officer. Salary £50 per annum, with board, lodging, &c.

NEWCASTLE-UPON-TYNE AND NORTHUMBERLAND SANATORIUM FOR CONSUMPTION, Barrasford, North Tyne.—Resident Medical Officer, unmarried. Salary £180 per annum, with board, residence, and laundry.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—Third Resident Medical Officer. Salary £60 per annum, with board, residence, and laundry.

NORTHAMPTONSHIRE COUNTY COUNCIL EDUCATION COMMITTEE.—School Medical Officer. Salary £350, rising to £400 per annum, and travelling expenses.

OXFORD, RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—Junior House Surgeon, unmarried, for six months. Salary at rate of £40 per annum, with board, &c.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician for six months, renewable. Salary £75 per annum, with board, residence, and washing.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, residence, and washing.

READING, ROYAL BERKSHIRE HOSPITAL.—House Physician. Salary £80 per annum, with board, lodging, and washing. Also Assistant House Surgeon. Salary £60 per annum, with board, lodging, and washing.

ST. GILES, CAMBERWELL, INFIRMARY, Brunswick-square, Camberwell.—Assistant Medical Officer. Salary £120 per annum, with apartments, board, and washing.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Assistant Resident Medical Officer, unmarried, for six months. Salary at rate of £80 per annum, with all found.

SALFORD ROYAL HOSPITAL.—Resident Surgical Officer, House Physician, House Surgeon, and Junior House Surgeon, all for six months. Salaries at rate of £100, £90, £60, and £50 per annum respectively, with board and residence.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board and residence.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE INFIRMARY.—Junior House Surgeon. Salary £90 per annum, with residence, board, and washing.

SOUTHWARK UNION INFIRMARY, East Dulwich Grove, S.E.—Assistant Medical Officer. Salary £100 per annum, with board, lodging, and washing.

STOCKPORT EDUCATION COMMITTEE.—School Medical Officer. Salary £250, increasing to £300 per annum.

SUNDERLAND INFIRMARY.—House Surgeon. Salary £80 per annum, with board, residence, and washing.

TAUNTON ISOLATION HOSPITAL.—Medical Attendant. Salary £120 per annum.

TEIGNMOUTH HOSPITAL, SOUTH DEVON.—House Surgeon. Salary £70 per annum, with board, lodging, and washing.

WALLASEY DISPENSARY AND VICTORIA CENTRAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and service.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior House Surgeon, unmarried. Salary £120 per annum, with residence and board.

WOLVERHAMPTON EDUCATION COMMITTEE.—Medical Officer. Salary at rate of £250 per annum.

WORCESTER COUNTY AND CITY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £140 per annum, with board, lodging, attendance, and laundry.

WORCESTER GENERAL INFIRMARY.—House Surgeon. Salary £80 per annum, with board, residence, and washing.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Sheerness, in the county of Kent; at Lydbrook, in the county of Gloucester; at Wisbech, in the county of Cambridge; and at Holbeach, in the county of Lincoln.

Births, Marriages, and Deaths.

BIRTHS.

CROOKSHANK.—On August 13th, at D'Antraignes, Barnes, S.W., the wife of F. G. Crookshank, M.D., of a son.

MILNER.—On August 8th, at Oak Lodge, Parkstone, Dorset, the wife of Vincent Milner, M.B., of a daughter.

OLIVER.—On August 14th, at the Gables, Maidstone, the wife of Charles Pye Oliver, M.D. Lond., D.P.H., of a son.

DEATHS.

GAGE BROWN.—On August 13th, at Wreningham Rectory, Norwich, Sir Charles Gage Brown, K.C.M.G., LL.D., M.D., aged 82 years.

STEGGALL.—On August 14th, at Queen-square, Bloomsbury, John William Billing Steggall, M.R.C.S., L.S.A., in his 82nd year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

AN ADAPTABLE REMEDY AND A FAMOUS QUACK.

In the July number of the *St. Mary's Hospital Gazette* is a letter from Mr. R. S. Wilkinson inclosing an advertisement from the last page of "The Compleat Practice of Physick," in 18 volumes, by Lazarus Riverius, London, 1655, which Mr. Wilkinson believes to be the first medical book published in English. It is a translation of a Latin work, which we take to have been that made by Nicholas Culpeper, Abdiah Cole, and William Rowland, and a popular work which went through many editions. The advertisement is such an excellent example of the claims of the eternal quack that we quote it in full:—

The Vertues, life and variety of Operations of the True and Phylosophical AURUM POTABILE, Attained by the Studies of Doctor Freeman, and Dr. Culpeper, and left with his Widdow, and administred by a Physitian in her House neer LONDON, on the East side of Spitlefields, next door to the red Lyon.

The Vertues are as follows:—

It Cures all Agues, whether Quotidian, Tertian, or Quartan; as also it cured divers people of that most horrid putrid Feaver, which so violently siezed on mens Bodies (both before and after Michaelmas, 1653), to the great admiration of many; and when the parties Diseased have been both senceless and speechles, for that neither that, nor any other Medicine or PANACEA, though never so gentle, could safely be administred into the Body, it hath beyond all hopes, by external application on the stomack revived them. It cures the Gout of all sorts perfectly being administred as the Physitian shal advise. It causeth Women subject to Abortion, or Miscarriage, to goe their time; and yet being given when the time comes, it causeth a spedy and easie delivery. It is an infallible cure for the French Pox and doth it with such speed, ease, and Secretness, that none of the nearest relation shall take notice thereof. It cures the Green-sickness and all sorts of Jaundice. It provokes the Terms. It is good for Aches and all afflictions coming of cold. It helps the Rickets. But to what purpose do I nominate diseases in particular, when it is an universall Remedy for all diseases being administred as the Physitian shal advise? For its chief aim is exhilarating the vital spirits and heart. It both binds and stops Fluxes, yet Purges; it both Vomits, and stays Vomiting; it causes sweat, yet cures preternatural Sweatings, and performs all its operations as Nature itself would have it, because it only fortifies her in her Centre.

We doubt whether even the columns of a modern newspaper trading in quack advertisements could match the effrontery of this, the completeness of which, indeed, almost compels admiration. For the credit of seventeenth century medicine in England it is gratifying to record that Nicholas Culpeper, who was a notorious quack and astrologer, incurred the severe displeasure of the College of Physicians, whose Pharmacopœia he translated under the title of "A Physical Directory," a book of which, according to the Dictionary of National Biography, the royalist periodical, "Mercurius Pragmaticus" (Pt. II., No. 21, 1649), wrote that it "was done (very filthily) into English by one Nicholas Culpeper who ..... is arrived at the battlement of an absolute Atheist, and by two yeere's drunken labour hath Gallimawfred the apothecaries book into nonsense, mixing every receipt therein with some scruples, at least, of rebellion or atheism, besides the danger of poysoning men's bodies. And (to supply his drunkenness and trachery with a thirty shilling reward) endeavoured to bring into obloquy the famous societies of apothecaries and chyrurgeons."

We fear that the tenderness of the modern law renders this robust statement of opinion an undesirable model for the castigation of a modern quack. But the phrase "hath Gallimawfred the apothecaries book into nonsense" deserves rescuing from oblivion. We commend it to any examiner in materia medica who may be casting about for a phrase that shall express a candidate's insufficiency in vigorous but still dignified language.

NEW ZEALAND SUBSIDISED APPOINTMENTS.

To the Editor of THE LANCET.

SIR,—Occasionally an advertisement occurs in the home papers for a medical man for a sparsely populated district in New Zealand. A guarantee of £300 per annum is usually offered, part of which is a grant from the New Zealand Government, and part made up by subscriptions from the settlers. The writer has had personal experience of one of these appointments and thinks it his duty to place it before intending applicants.

The scale of fees is very high compared with home charges, but the fewness of patients and the dearness of living more than outweigh any apparent advantage, and £300 in these parts of New Zealand does not go as far as £150 in the United Kingdom. In winter the main roads were mud up to the horse's knees and frequently to its girths, while the bush tracks were, even to an experienced rider, dangerous and often impassable. He was under the domination of a committee of settlers, some of whom could neither read nor write, before whom he was liable to be hailed on the most trivial pretext.

Recently a medical man holding one of these appointments had to go through the insolvency court because the settlers failed to pay their subscriptions. Space forbids further details, but I would advise any medical man to make every inquiry before accepting one of these appointments.

I am, Sir, yours faithfully,

August 17th, 1908. ALTRUIST.

INFECTION AND THE TELEPHONE.

Of the several devices for the prevention of infection through the use of the unprotected telephone mouthpiece which we have been called upon to notice in our columns the best yet submitted to us seem to be those founded on the principle of preventing germs from entering the mouthpiece by means of a covering of fabric impregnated with an antiseptic. Messrs. Jeyes have submitted to us an "Antiseptic Telephone Cap" which is sold at the price of 3*d.* and consists of a

metal ring and rim with the annular space filled by a diaphragm of gauze. This diaphragm is intended to be occasionally moistened with a solution of Jeyes' fluid. The cap is adjusted to the telephone by means of fine wire springs, which, it seems to us, however, may break away from the rim. In the *Times* of August 12th a correspondent makes the suggestion that users of public telephones might "fit a piece of thin but tough paper (good typewriting paper does well) over the mouthpiece of the receiver, so as to form a little tight drumhead to it. If the paper be strong enough it will suffice to crumple it tightly round the neck of the cup, but a small elastic band holds better. The paper is fitted in a few seconds and removed as quickly. The user speaks against it, but without touching it." This is the adoption of a suggestion made in these columns that public call offices should be supplied with some kind of aseptic paper mouthpieces which could be destroyed after use.

THE MANGO FRUIT.

In olden days Anglo-Indians whose lot had been cast in the Western Presidency used to say that the queen of all fruits was the mango and that it could only be obtained in perfection in Bombay and Goa. The fruit that occasionally appeared on English dessert tables was a mango only in name, flavour and aroma being both absent. To obtain the supreme luxury in its prime it was absolutely necessary that the sybarite should cross the sea. It seems, however, according to the *Pioneer Mail*, that there is some chance of the Alfonzo mango finding its way to the Covent Garden fruit stalls, for Florida has lately been importing grafts of the Bombay stock and the promoters are confident of their ability to supply the English markets, in the near future, with as many mangoes in perfect condition as there may be a demand for. As might be expected, too, continues the writer of the article in our contemporary, the flavour and quality of the Alfonzo will be greatly improved through the introduction of the parent tree into American soil.

R. H.—We do not see that the words of the surgeon reported in THE LANCET are at variance with the medical advice. Our correspondent had better follow his physician's counsel and keep his physician informed as to his health.

Enquirer.—From what our correspondent tells us the election seems to have been highly irregular.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, August 20th, 1908.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Aug. 14	29·92	NNW	...	107	66	55	54	59	Cloudy
,, 15	30·05	N.E.	...	117	69	53	54	56	Fine
,, 16	30·15	E.	...	121	70	52	54	59	Fine
,, 17	30·14	E.	...	115	70	52	55	58	Cloudy
,, 18	30·16	N.E.	...	79	65	55	55	57	Overcast
,, 19	30·19	N.E.	...	103	66	57	55	59	Fine
,, 20	30·00	E.	...	69	63	57	58	59	Raining

During the week marked copies of the following newspapers have been received:—*Daily Telegraph, Portsmouth Evening News, Lancashire Post, Daily Chronicle, Daily Mirror, Daily Graphic, Western Chronicle, Christchurch Times, Scientific American, Literary Digest (New York), Broad Arrow, Coventry Times, Edinburgh Evening News, Hereford Times, Wimbledon Gazette, Motor Car Journal, Liverpool Daily Post, Liverpool Daily Courier, Cardiff Times, Ely Gazette, Alnwick Express, &c.*

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—12 noon, Lecture:—Dr. Low: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eyes. 3 P.M., Lecture:—Dr. Saunders: Medical Cases.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture: Dr. Abraham: Cases of Skin Disease.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Diseases of the Throat, Nose, and Ear. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Mr. Pardoe: The Diagnosis of Surgical Diseases of the Kidney.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eyes. 4 P.M., Lecture:—Mr. Armour: Surgical Cases.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Davis: Medical Cases.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Dr. Robinson: Diseases of Women.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (24th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), West London (2.30 P.M.).

TUESDAY (25th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College 2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.).

WEDNESDAY (26th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan 9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.).

THURSDAY (27th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.).

FRIDAY (28th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.) Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.).

SATURDAY (29th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will insure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and generally do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Anderson's College Medical School, Glasgow, Secretary of; Messrs. Appleton and Co., Lond.; Mr. H. G. Adamson, Lond.; Mr. J. Stanley Avery, Johannesburg.

B.—Mr. B. C. Bousfield, Lond.; Mr. John Baker, Lond.; Messrs. Bertaut-Blancard Frères, Paris; Mr. W. E. Baxter, Lewes; Sir Lauder Brunton, Bart., Lond.; Sir Wm. Bennett, Lond.; Dr. R. A. Barr, Nashville, U.S.A.; *Bury Times*, Manager of; Bedford County Hospital, Secretary of; The Brompton Motor Co., Lond.; Mr. P. Black, Lond.; The Bayer Co., Lond., Manager of; Dr. G. B. Batten, Lond.; Mr. Haydn Brown, Caterham; Mr. G. Douglas Buchanan, Dresden; Borough of St. Marylebone Health Society, Hon. Secretary of; Mr. P. R. Broemel, Lond.

C.—Mr. Norton Clowes, Reading; Cornwall County Council Sanitary Committee, Chairman of; Coal Smoke Abatement Society, Lond., Secretary of; Camberwell Guardians, Clerk to the; Cumberland Infirmary, Carlisle, Secretary of; Crooksbury Sanatorium, Farnham, Medical Superintendent of; Coventry and Warwickshire Hospital, Secretary of; Messrs. Crossley and Co., Lond.; Sir James Crichton-Browne, Dumfries.

D.—Dr. A. Duncan, Lond.; Mrs. Dashwood, Crowborough Beacon; *Daily Mirror*, Lond., Editor of; Dublin Royal Victoria Eye, &c., Hospital, Secretary of; Mr. James Douglas, Lond.; Mr. W. Daley, Bootle; Dr. R. T. Drummond, Talawakelle, Ceylon; Dorset County Asylum, Dorchester; Dr. Reginald Dudfield, St. Brelade's Bay.

E.—Dr. G. J. Eady, Folkestone; Mr. E. Parry Evans, Lond.; Enquirer; E. L. A.

F.—Mrs. M. J. Fry, Clevedon; Messrs. Ferris and Co., Bristol; Fareham Rural District Council, Clerk to the; Fourth International Congress on Electrology and Radiology, Amsterdam, Executive Committee of; Dr. Theodore Fisher, Sidcup; Dr. Thomas Fiaschi, Sydney.

G.—Dr. G. A. Gibson, Edinburgh; Dr. G. Lovell Gulland, Buncrana; Dr. E. S. Goodhue, Holualoa, Hawaii; Glasgow Royal Infirmary, Secretary of; Messrs. E. Gallais and Co., Lond.; Dr. Alan B. Green, Lond.; Messrs. E. George and Sons, Lond.; Glasgow Maternity Hospital, Secretary of.

H.—Dr. D. Hethcote, Barnard Castle; Mr. J. Hart, Lond.; Hospital for Diseases of the Throat, Lond.; Heath National Testimonial Fund, Hon. Secretary of.

I.—Messrs. Isaacs and Co., Lond.; International Health Association, Watford, Manager of; Italian Embassy, Lond., Secretary of; Ilford, Ltd., Ilford, Secretary of; Ingham Infirmary, &c., South Shields, Secretary of.

J.—Mr. G. P. James, Penarth; Mr. E. O. Jones, Tal-y-sarn; Mr. W. Judd, Lond.

K.—Mr. W. W. King, Edinburgh; Dr. Knight, Edinburgh; K. L. S.; Mr. W. B. Kebble, Lond.; Dr. W. F. Keating, Reading; Messrs. R. A. Knight and Co., Lond.

L.—Mr. H. K. Lewis, Lond.; Leeds University, Dean of the Medical School; Loughborough and District General Hospital, Secretary of; Local Government Board, Lond., Medical Officer of; *Luton News*, Manager of; Leslies, Ltd., Lond.

M.—Dr. A. S. MacNalty, Lond.; Professor Robert Muir, Glasgow; Dr. C. A. Morton, Clifton; Dr. E. S. McKee, Cincinnati; Miol Manufacturing Co., Lond., Secretary of; M. L.; Messrs. C. Mitchell and Co., Lond.; Messrs. Macmillan and Co., Lond.; Professor Middendorp, Groningen; Dr. H. W. G. Macleod, Lynton; Maltine Manufacturing Co., Lond.

N.—Dr. David Newman, Glasgow; Mr. J. O. Neumann, Lond.; Mr. Vincent P. Norman, Lond.; Messrs. Neyroud and Sons, Lond.; Mr. H. Needes, Lond.; Mr. J. C. Needes, Lond.

O.—Mr. E. F. O'Ferrall, Lond. Dr. Thomas Oliver, Newcastle-upon-Tyne.

P.—Mr. C. A. Parker, Lond.; Messrs. Peacock and Hadley, Lond.; Plumbers, Worshipful Company of, Lond., Clerk of.

Q.—Queen Margaret College, Glasgow, Secretary of.

R.—Mr. J. Randall, Liverpool; Messrs. E. J. Reid and Co., Lond.; Royal Exchange, Glasgow, Secretary of; Reading Pathological Society, President of; Mr. R. H. Rowell, Jesmond; Messrs. Roberts and Co., Lond.; Royal Sanitary Institute, Lond., Secretary of; Royal Berkshire Hospital, Reading, Secretary of; Radcliffe Infirmary, Oxford, Secretary of; Messrs. Reynolds and Branson, Leeds; Dr. E. N. MacBean Ross, Isfahan; Mr. Owen Richards, Limpsfield.

S.—St. Mary's Hospitals, Manchester, Secretary of; Storthes Hall Asylum, Kirkburton, Clerk to the; Southampton Free Eye Hospital, Secretary of; Star Engineering Co., Wolverhampton; St. George's Hospital Medical School, Lond., Dean of; Mr. Eric H. Shaw, Durham; Messrs. G. Street and Co., Lond.; Sunderland Infirmary, Secretary of; St. Thomas's Hospital Old Student's Dinner, Lond., Hon. Secretaries of; Rev. J. P. Sandlands, Brigstock; Salford Royal Hospital, Secretary of; *Southampton Times*, Manager of; Scholastic, Clerical, &c., Association, Lond.; South Devon and East Cornwall Hospital, Plymouth, Secretary of; Mr. A. Sbriglia, Paris; Dr. D. Sarason, Berlin.

T.—Mr. H. Trommsdorff, Aachen; Mr. H. M. Thomas, Goodwick; Messrs. Truelove and Hanson, Lond.; Mr. E. A. Toms, Lond.; Mr. J. Teixeira, Edinburgh; T. N. X.; Tasmania Post and Telegraph Association, Hobart, Hon. Secretary of.

U.—University of London, Principal of.

V.—Victoria Dental Hospital, Manchester, Secretary of; Mr. S. Vosper, Lond.

W.—Dr. Walter G. Walford, Lond.; West Kent General Hospital, Maidstone, Secretary of; West Norfolk and Lynn Hospital, King's Lynn, Secretary of; Wolverhampton Corporation Education Committee, Clerk to the; West Sussex County Asylum, Chichester; Mr. A. P. Walters, Island of Figg; Mr. C. Walker, Liverpool; Messrs. Willing, Lond.; Messrs. Wilson and Son, Lond.; Mr. J. T. Ainslie Walker, Lond.; Dr. W. B. Warrington, Liverpool; Mr. A. Waterhouse, Glasgow.

Y.—Mr. John H. Yearsley, Bournemouth.

Letters, each with enclosure, are also acknowledged from—

A.—Anglo-American Pharmaceutical Co., Croydon; A. M. M.

B.—Mr. B. R. Banks, Brighton; Mr. E. T. Blakeney, Roscommon; Dr. J. H. Bletsoe, Hornchurch; Bootle General Hospital, Secretary of.

C.—Dr. R. A. Campbell, Gloucester; Messrs. Cleaver and Co., Lond.; C. E. W.; C. H.; C. W. V.; Miss E. Cuvellier, Heaton Moor.

D.—David Lewis Epileptic Colony, Manchester, Secretary of; Mr. T. Dixon, Lond.; Dispenser, Streatham.

E.—Mr. R. Elphinstone, Towcester.

F.—Messrs. H. Frowde and Hodder and Stoughton, Lond.; F. C.; Mr. F. T. Fagge, Hanley; Mr. R. Fleming, Glasgow

G.—Mr. T. Gray, Morriston; Messrs. R. W. Greeff and Co., Lond.; Gillingham Education Committee, Secretary of; Glasgow University, Factors of.

H.—Mr. P. Harper, Lond.; Hull Royal Infirmary, Secretary of; Hastings and St. Leonards, &c., Hospital, Secretary of.

I.—Lieutenant-Colonel Irvine, R.A.M.C., Farnham.

J.—Dr. S. Johnston, Toronto; Mr. F. Talfourd Jones, Pembury; Mr. M. Judge, Markyate; J. H.

K.—Messrs. H. S. King and Co., Lond.; Mr. C. R. Keyser, Lond.

L.—Dr. T. Luson, Norbiton; Leeds Tuberculosis Association, Secretary of; Fleet-Surgeon G. Ley, R.N., Portsmouth; Leicestershire and Rutland Lunatic Asylum, Narborough, Secretary of; "Locum," Coleford.

M.—Mr. G. M. McKie, Lond.; Manchester Northern Hospital for Women, &c., Secretary of; *Midland Counties Herald*, Birmingham, Manager of; *Medical Times* Publishing Co., Lond., Manager of; M. E. Q.; Messrs. Menzies and Co., Glasgow; Monmouthshire Asylum, Abergavenny, Clerk to the; Dr. T. McCririck, Glasgow; Dr. J. J. Mooney, Abergwynfi; Dr. W. Miller, Selston.

N.—Newcastle-upon-Tyne Sanatorium, Secretary of.

O.—Mr. C. A. P. Osburne, Norwich.

P.—Miss C. E. Pring, Lond.; Dr. W. P. Pancknidge, Petersfield; Peckham House, Lond., Secretary of; Prince of Wales's General Hospital, Tottenham, Director of.

R.—Dr. D. Russell, Jaen, Spain; Dr. W. F. Robertson, Edinburgh; Royal Ear Hospital, Lond., Secretary of; R. A.

S.—Mr. W. Shepherd, Forfar; Stirling District Asylum, Larbert, Steward of; Swansea General Hospital, Secretary of; Messrs. W. B. Saunders, Lond.; Messrs. A. F. Sharp and Co., Glasgow; Dr. H. K. Smyth, Selukwe, Southern Rhodesia; Mr. G. Schilling, Sandy; Sanatogen Co., Lond., Secretary of; Messrs. Savory and Moore, Lond.; Messrs. W. H. Smith and Son, Manchester; Dr. W. M. Scott, Knock.

T.—Mr. P. Turner, Lond.; T. G.; Mr. G. Thompson, Ashby-de-la-Zouch; Dr. S. Taylor, Liverpool.

V.—Victoria Hospital, Burnley, Hon. Secretary of.

W.—Mr. W. White, Banbury; Mr. L. E. G. de Woolfson, Loughor; Mr. P. Wood, Crawley; W. T. G.; Worcester General Infirmary, Secretary of; W. B. K.; Mrs. Wiseman, Lond.

Y.—Yorkshire (West Riding) County Council, Wakefield, Clerk to the.

EVERY FRIDAY.

THE LANCET.

PRICE SEVENPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ...	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements and Situations Vacant	Ditto	0 4 6
	Every additional Line	0 6

Situations wanted: First 30 words, 2s. 6d.; per additional 8 words, 6d.
Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.

An original and novel feature of "THE LANCET General Advertiser" is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice but is in itself an *additional* advertisement.

Advertisements (to insure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to advertisements; copies only should be forwarded.

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 31, Rue Bapst, Asnières, Paris.